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a program for maximum effectiveness...



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DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON, D.C. 20310

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SUBJECT: Tank Forces Management Program

The program developed by the Tank Forces Management Group presents an opportunity to significantly improve the combat capability of our Armor Force as part of the combined arms team.

New attitudes and new management initiatives are necessary if our Army is to capture the full combat potential of current systems and those about to enter the force. A system approach to management of the Tank Force that ties together people and technology with specific focus on the entire weapon system is a step in that direction. Such a management technique could well prove to have application in varying degrees to other systems.

This program was approved by the Chief of Staff with decision criteria for each category as listed at inclosure (next under). Implementation plans are currently being prepared. Agencies responsible to implement recommendations or to continue ongoing actions will be notified by separate correspondence.

Richard G. Trefry

RICHARD G. TREFRY
Major General, GS
Acting Director of the Army
Staff

Incl
as

INCLOSURE - TIME RECOMMENDATIONS

CSA approved SELCOM recommendations on TFMG report as follows:

1. Implement category 1 and 2 recommendations.
2. Continue category 3 studies/analyses, deferring decisions until they are completed.
3. Develop resource requirements of category 4 recommendations, deferring decision until resources are defined.
4. Recognize category 5 efforts.
5. Examine applicability of recommendations to other weapons systems.
6. Adopt total weapon system management for tank force by establishing a Tank Forces Management Office in OCSA.

RECOMMENDATIONS BY CATEGORY

<u>Recommendation</u>	<u>Page</u>	<u>Category</u>
Personnel		
P1 (includes T12)	II-7 (IV-23)	1
P2	II-10	2
P3	II-11	2
P4	II-12	2
P5	II-13	4
P6	II-14	2
P7 (includes L2)	II-15 (III-11)	2
P8 (includes L2)	II-16 (III-11)	2
P9	II-17	2
P10	II-19	2
P11	II-21	2
P12 (includes T7)	II-22 (IV-15)	4
P13	II-23	2
P14	II-26	2
P15	II-27	3
P16	II-28	2
P17	II-29	4
P18	II-30	2
P19	II-31	2
P20	II-33	2
P21	II-34	2
P22	II-35	2
P23	II-36	4
P24	II-37	2
P25	II-38	3
P26	II-40	4
P27	II-41	2
P28	II-42	2

<u>Recommendation</u>	<u>Page</u>	<u>Category</u>
Logistics		
L1 (included in T3,T6)	III-10	Sec 13, 16
L2 (included in P7)	III-11	Sec P7
L3	III-12	3
L4	III-14	3
L5	III-16	3
L6	III-18	3
L7	III-20	3
L8	III-23	5
L9	III-25	3
L10	III-26	3
L11	III-29	3
L12	III-32	3
L13	III-33	5
L14	III-33	5
L15	III-33	5
L16	III-33	3
L17	III-35	1
L18	III-36	3
L19	III-38	3
L20	III-39	3
L21	III-40	3
L22	III-41	2
L23	III-43	2
L24	III-44	2
L25	III-45	5
Training		
T1	IV-8	1
T2	IV-9	1
T3 (includes L1)	IV-10 (III-10)	1
T4	IV-11	1
T5	IV-12	1
T6 (includes L1)	IV-14 (III-10)	1
T7 (included in P12)	IV-15	Sec P12
T8	IV-16	1
T9	IV-17	1
T10	IV-19	3
T11	IV-21	2
T12 (included in P1)	IV-23	Sec P1
T13	IV-24	3
T14	IV-27	3
T15	IV-28	3
T16	IV-31	2
T17 (included in D8)	IV-32	-
T18	IV-33	3
T19 (included in D1)	IV-35	Sec D1
T20 (included in D1)	IV-37	Sec D1
T21	IV-38	3

<u>Recommendation</u>	<u>Page</u>	<u>Category</u>
Development		
D1 (includes T19, T20)	V-11 (IV-35, IV-37)	3
D2	V-13	2
D3	V-14	2
D4	V-15	2
D5	V-16	2
D6	V-17	5
D7	V-18	2
D8	V-19	2
D10	V-21	5

CHIEF OF STAFF

Memorandum

U. S. ARMY

DATE 31 August 1977

CSM 76-5-43

DATE 13 Aug 1976

FILE CS334 (13 Aug 1976)

ACTION OFFICER/EXT
MAJ Black/lk/72544

SUBJECT: Tank Forces Management

MEMORANDUM FOR: HEADS OF ARMY STAFF AGENCIES

1. PURPOSE. This memorandum provides for the establishment of the Tank Forces Management Group (TFMG) within the Office of the Chief of Staff, Army, effective 9 August 1976.
2. DESIGNATION OF CHAIRMAN. LTG James Kalergis (Ret) is designated as Chairman, TFMG, concurrent with the establishment of the position.
3. MISSION. The mission of the TFMG is to develop a program that will optimize the combat potential of the US Army tank forces, to present the program to the Chief of Staff, Army for approval, and to coordinate the implementation of the approved program.
4. STAFF RELATIONSHIPS.
 - a. The Chairman, TFMG, reports directly to the Chief of Staff, Army.
 - b. The Chairman, TFMG, has delegated authority of the Chief of Staff, Army, within the policy guidance prescribed in the attached charter, in the accomplishment of his mission.
 - c. The Chairman, TFMG, is authorized direct access to Army and other Service Staff agencies, the Office of the Secretary of the Army, the Office of the Secretary of Defense, Major Army Commands and their subelements, and staff support and field operating agencies.
 - d. Establishment of this group does not relieve Army Staff elements and/or MACOMs of their assigned staff and command responsibilities. The Chairman, TFMG, will maintain close and continuous coordination with the Army Staff and MACOMs.
5. ARMY STAFF AND MACOM RESPONSIBILITIES.
 - a. Each Army Staff agency and MACOM will appoint a point of contact for TFMG actions.
 - b. TJAG will provide legal advice as required.

SUBJECT: Tank Forces Management

6. ADMINISTRATIVE AND RESOURCE SUPPORT.

a. Military and civilian support will be directed by Director of the Army Staff (DAS).

b. Administrative support (space, clerical, and equipment) will be furnished by DDAS (Executive Services), OCSA.

c. TFMG will be located in Room 1A871, The Pentagon.

BY DIRECTION OF THE CHIEF OF STAFF:

1 Incl

as



WILLIAM B. FULTON
Lieutenant General, GS
Director of the Army Staff

CHARTER OF THE TANK FORCES MANAGEMENT GROUP

1. PURPOSE. This Department of the Army charter establishes the Tank Forces Management Group (TFMG) and specifies the mission, authority, and responsibilities of the group.

2. TANK FORCES MANAGEMENT GROUP. Effective 9 August 1976, the group is established within the Office of the Chief of Staff, Army. The Chairman is LTG James G. Kalergis (Ret). The group is located in Room 1A871, The Pentagon.

3. MISSION.

a. The mission of the TFMG is to develop a program that will optimize the combat potential of US Army tank forces, to present the program to the Chief of Staff for approval, and to coordinate the implementation of the approved program.

b. The program will be developed by analyzing how to:

(1) Increase the effectiveness of individual and collective training in units.

(2) Improve personnel management procedures.

(3) Improve logistic and materiel support procedures.

(4) Identify opportunities in the functional areas for improvement as pertains to Army tank forces.

c. The Chairman, TFMG, using current TRADOC analysis as a point of departure, will:

(1) Survey existing or potential problems impacting on the US Army tank forces.

(2) Examine alternatives for accomplishing the mission.

(3) Develop program improvements and a plan for implementing improvements.

(4) Present recommendations to the Chief of Staff, Army.

(5) Coordinate implementation of the approved program.

4. **AUTHORITY AND FUNCTION.** The Chairman, TFMG, within the policy guidance prescribed herein and by authority of the Chief of Staff, will:

a. Establish objectives and goals, specify priorities for action, and coordinate activities of the Army Staff and Major Army Commands in the development of an integrated program to improve the operational potential of US Army tank forces.

b. Review plans and actions of the Army Staff and Major Army Commands to improve US Army tank forces.

c. As appropriate, task the Army Staff and Major Army Commands to prepare, coordinate, and execute plans, studies, and actions.

d. Provide a single point of contact within DA for the coordination and direction of all activities pertaining to tank forces improvement.

5. **RELATIONSHIPS.**

a. The Chairman, TFMG, reports directly to the Chief of Staff.

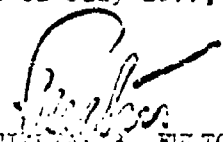
b. The Chairman, TFMG, is authorized access to and coordination with Army and other Service Staff agencies, the Office of the Secretary of the Army, the Office of the Secretary of Defense, MACOMs and their subelements, and staff support and field operating agencies.

c. Establishment of this group does not relieve the Army Staff elements and/or MACOMs of their assigned authority and responsibilities.

d. The Chairman of the TFMG will provide periodic progress reports to the Chief of Staff, Army and conduct periodic in progress reviews for selected members of the General Staff and MACOMs.

6. **SPECIAL DELEGATION.** The Chairman, TFMG, is delegated approval authority in the selection of the deputy and other key personnel assigned to the TFMG.

7. **EXPIRATION.** This charter expires 31 July 1977, unless sooner terminated.


WILLIAM B. FULTON
Lieutenant General, GS
Director of the Army Staff

TANK FORCES MANAGEMENT GROUP

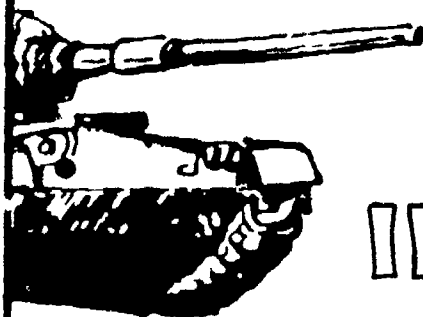
James G. Kalergis	LTG(USA, Ret)	029-10-0210	
Robert S. McGowan	COL	136-22-2785	(2nd Armored Div, Ft Hood, Tx)
Jack L. Sauer	LTC(P)	167-26-5605	(ODCSLOG)
Claude L. Clark	LTC(P)	281-34-9667	(OCSA)
Dale K. Brudvig	LTC	547-44-8685	(ODSCOPS)
William F. Bryant	LTC	557-40-6989	(ODCSOPS)
Ronald E. Craven	LTC	019-28-2610	(OCSA)
Frederick M. Franks	LTC	190-26-5127	(NWC-1978)
Patrick J. Kirwin	LTC	298-34-2001	(ODCSPER)
William H. Roche	LTC	261-48-1858	(OCLL)
Morris G. Strickland	LTC	418-44-1758	(ODCSOPS)
Joseph C. Conrad	MAJ(P)	037-26-3460	(OCSA)
William R. Rittenhouse	MAJ(P)	233-60-9861	(ODCSRDA)
Harlin N. Dunbin, Jr.	MAJ	446-40-7299	(ODCSRDA)
Robert W. Haubrich	MAJ	389-36-5395	(ODCSPER)
Thomas E. White	MAJ	370-44-4712	(Armor Center, Ft Knox, Ky)
Jack W. Frazier	GS-14	578-30-5384	(OCSA)

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Chapter I

Tank Forces Management Group



INTRODUCTION

INTRODUCTION

The Army faces an increasing management challenge caused by the need to exploit fully the combat potential of fielded and new weapons

FULLY COMBAT READY



systems about to enter the force. These systems must be employed at the peak of their performance threshold if the Army is to win battles outnumbered. TRADOC's Total Tank Systems Study (T²S²) concluded that the combat capability of the Army Tank Force is seriously degraded because the current management of tank resources is not adequate (fig. 1). The findings of the Tank Forces Management Group (TFMG) confirmed and strongly reinforced this general conclusion.

Figure 1

In accordance with its assigned charter, TFMG developed a program to capture the full combat potential of the Tank Force. In its analysis, TFMG extended the TRADOC tank study, using an investigative process that concentrated on finding solutions to problems as they applied to the total tank system. This focus required several iterations of subsystem analyses that ultimately led to a series of total system solutions. That review is now complete and the program is presented in subsequent chapters of this report.

The Army accomplishes the tasks to man, equip, and train the Total Force through subsystem management processes of personnel, logistics, training, and development. The Planning, Programming, and Budget System (PPBS) cuts across these functional lines in a coordinated effort to allocate resources as required to support the force. This current management structure has provided control of resources: soldiers are recruited and trained, equipment is procured and is being improved and logistics support is functioning. The general management thrust has been to effect total force improvements by improving process efficiency. This straight functional approach has management limitations that make it inadequate in the management of the Army's Tank Force.

This conclusion became increasingly more apparent as the TFMG review progressed. When considered in a total system environment, some initial conclusions reached in the functional subsystems proved to be invalid. It was only after identified deficiencies were examined in coordination with findings in other subsystems that total Tank Force recommendations were developed. This focus on integration of the subsystems to effect total system improvements became the basis of the

TFMG system management deliberations. Achieving that full understanding of the systems process permitted clearer identification of the problems and possible solutions. The current Army management structure is not able to provide this intensive system focus and thus cannot effect the degree of improvement needed in the Tank Force (fig. 2).

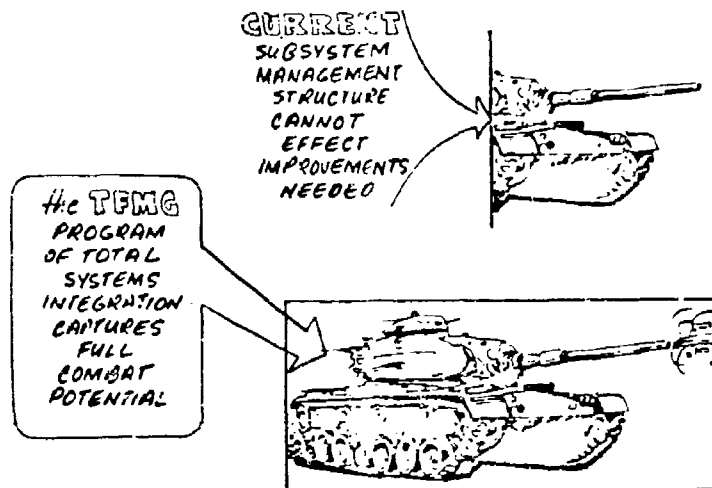


Figure 2

The present Army management system is the product of years of test and trial--and continuous improvement; it effectively changes as external conditions require. The degree and urgency of changing conditions now confronting the Army are becoming increasingly significant: high-cost weapons systems with dramatic improvements of combat effectiveness, increasing personnel and training costs, intensified competition for scarce resources and budget dollars, and a threat producing weapons systems in great quantity.

The key to meeting these changes for a select few critical weapons systems is to adopt intensive total systems management. By integrating and coordinating the various contributive resources--troops, training, supplies, services, doctrine--the full effectiveness of new, highly capable weapons can be achieved. It is neither necessary nor desirable to manage all weapons systems with the same level of intensity.

REPORT ORGANIZATION

The following chapters describe the individual subsystems that are elements of the total management structure, together with the 83 specific findings and recommendations for improvement. Separate listings of subsystems should not detract from the basic review premise that only if improvements in each subsystem are implemented in a total system environment will the full combat potential of the Army Tank Force be gained and maintained.

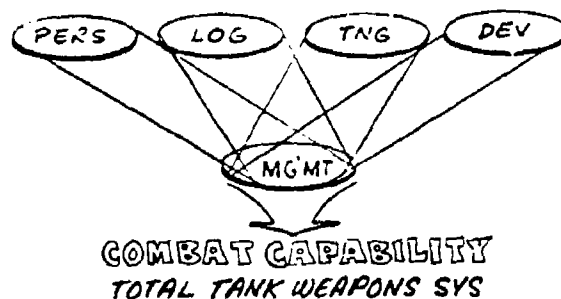
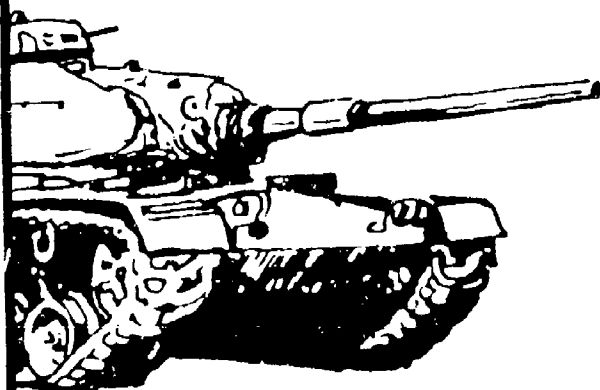


Figure 3

The organization of this report mirrors the system approach. Each functional subsystem has been analyzed as it relates to the tank system and interrelates with other subsystems. Subsystem chapters are listed before management because suboptimization of processes is important only insofar as it contributes to improved system effectiveness. Management is discussed in the final chapter because it is the structure that links the subsystems and implements the weapons system approach for the Tank Force (fig. 3).

Chapter II

Tank Forces Management Group



PERSONNEL

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In-depth analyses along with further documentation and bibliography are available and are contained in the Personnel Subsystem Appendix, in TFMG office, Pentagon, Room 1A871.

INTRODUCTION

The outcome of battle increasingly depends upon the proper functioning of a few primary weapon systems. As a result, the personnel system must be sufficiently responsive to provide the necessary focus in the support of these systems. The highly trained personnel who operate these systems must be delivered to the battlefield with precision and in a combat-ready condition. In short, the personnel system must be weapons-system-oriented.

This doctrine, expressed in greater detail in FM 100-5, Operations, provided the standards and drove the methodology in the development of a program to optimize the combat potential of the tank force.

To measure the capability of the current personnel system to support this doctrinal concept, it was necessary to examine in detail, and articulate, its general characteristics (fig. P-1) and its functional processes. Every aspect of the personnel system which impacts on the capability of the tank weapon system was analyzed, diagramed, and assessed to determine its contribution to the effectiveness of the total tank system. This weapons-system approach required a full appreciation of the interrelationships between and among all of the various functions and subsystems which, in combination, constitute and support the tank system. Because this approach was taken, the improvements recommended in each functional area complement and support one another in a synergistic manner--the value of each individual improvement is multiplied by the effect of the others.

in general...

THE PERSONNEL SYSTEM IS...

VERTICAL... BN-INSTALL/DIV-MACOM-DA

COMPLEX... FRAGMENTED RESPONSIBILITIES...
MYRIAD MECHANICAL & HUMAN INTERFACES

TIME DEPENDENT... TO RECRUIT... TRAIN... CHANGE
REPLACE... RETRAIN

PEACETIME DESIGN... RPC's IN EUROPE and
MOBILIZATION PLANS UNCLEAR

SHORT TERM ORIENTED... ANNUAL MANYEAR \$...
• END STRENGTH CEILINGS... TRAINING...
• LOAD CEILINGS... RECLASSIFICATION PROGRAMS

FUNCTIONALLY MANAGED... FOCUSED ON PROCESS,
• NOT PRODUCT... NOT WEAPON SYSTEM ORIENTED...
• NOT UNIT ORIENTED

Figure P-1

THE PERSONNEL MANAGEMENT SYSTEM

DEFINITION

Personnel management is a series of processes directed toward the procurement, training, utilization, separation, development and motivation of military personnel. It is a function so basic to the vitality of the Army that every level of command is accorded critical functions, responsibilities, and prerogatives.

The process of personnel management follows a life-cycle sequence of events, as indicated by its functions (fig. P-2): requirements, training, distribution, sustainment, and separation. Currently, the Army accomplishes these functions in an environment of equitable treatment and in a manner that meets overall manpower goals. Measured in terms of process-efficiency, this macromanagement of personnel works reasonably well. Yet, it becomes questionable whether this method of personnel management is universally applicable since it cannot respond to unique personnel management requirements of the various weapons and support systems.

Major Functions... ARMY PERSONNEL SYSTEM

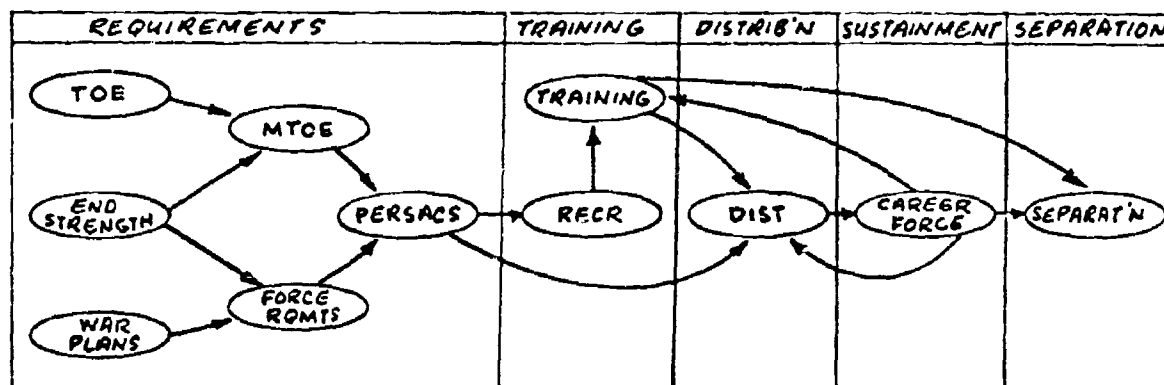


Figure P-2

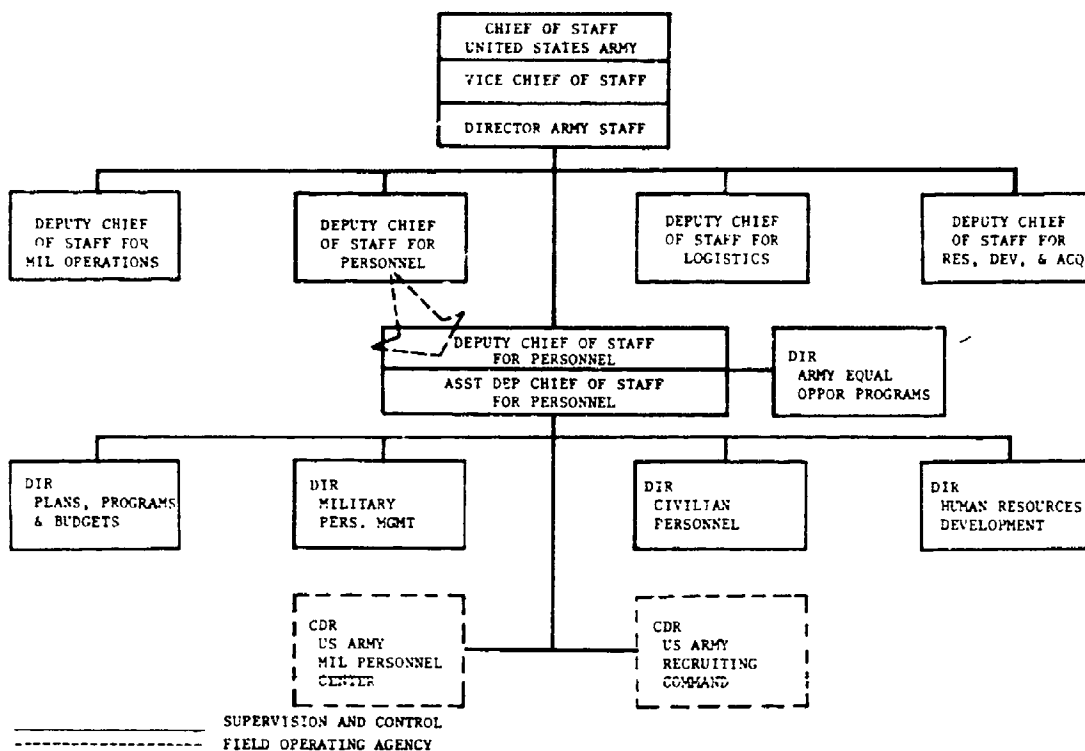


Figure P-3

THE ORGANIZATION

The Army organization for personnel management is designed on a functional basis (fig. P-3). Decentralizing operations and responsibilities, with coordinated control, is the Army philosophy through which overall objectives and principles are established. The task of implementing this philosophy rests with the people down the line. The chief executive officer is the Deputy Chief of Staff for Personnel, and his office comprises the planning staff. Commanders of MILPERCEN and USAREC, as operating group heads, are responsible for the overall results and planning of their groups. Field commanders, through their personnel staffs and subordinate commanders, operate the system and provide the necessary information to keep it running.

THE FUNCTIONS

The life cycle sequence of the five personnel system functions (fig. P-4) provides a convenient and rational division of the total management system. This division is reflected throughout the system in regulations, procedures, and organizational structure. An analysis of the subsystems within each function, however, provides an insight into the interdependence of each function on the other, and the common set of information systems upon which each function is dependent.

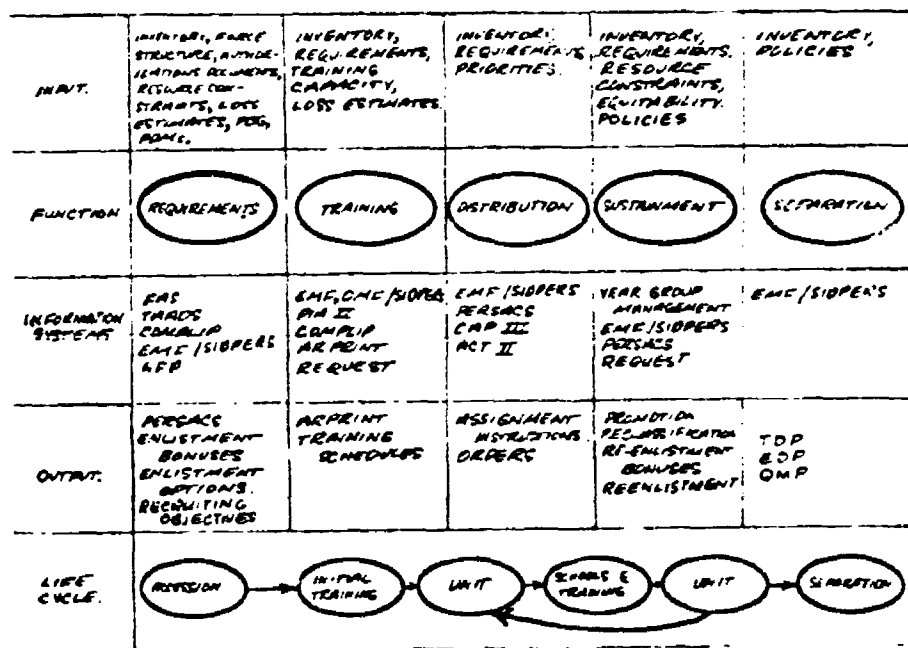


Figure P-4

The following findings and recommendations are grouped according to function for ease of presentation and understanding. It is important to bear in mind, however, that these improvements cut across functional lines in their interrelationships with other recommendations and their impact on the total system.

REQUIREMENTS

Determining the Army's accession and training requirements involves a complex interaction among Army staff agencies and the MACOM. A highly simplified summary of this process is portrayed in fig. P-5.

(1) ODCSOPS initiates the requirements determination by the development of the required force structure. This determination is expressed in terms of numbers of units of a particular type, constrained by resource availability.

(2) The TOE is the document which translates doctrine into types of units. MACOM use the TRADOC-developed TOE as models in the development of their MTOE. These MTOE, which reflect command unique missions and resource constraints, are provided to ODCSOPS where they are entered in The Army Authorization Document System (TAADS). TAADS provides the central file of manpower authorizations, by grade and MOS.

(3) These authorizations are compiled by ODCSOPS, manipulated to conform to resource availability, and passed to ODCSPER by means of the Personnel Structure and Composition System (PERSACS), to provide the definitive personnel requirements list.

(4) ODCSPER uses computer-assisted analyses to project total personnel losses which, when compared to the requirements list, provides total accession requirements.

(5) Using current inventory data bases and loss models, MILPERCEN calculates projected losses by MOS. These projections are used to develop training requirements.

Determination of requirements is a process which involves actions by a myriad of organizations, offices, and systems. The decentralized nature of this system and the process orientation of the diverse parts produces less than optimal results for the tank weapons system. An analysis of the requirements function as it impacts on the tank force provides the following findings.

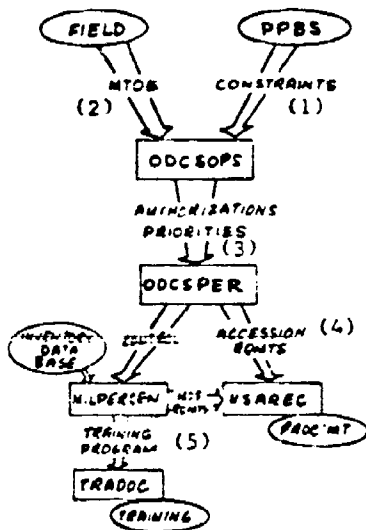


Figure P-5

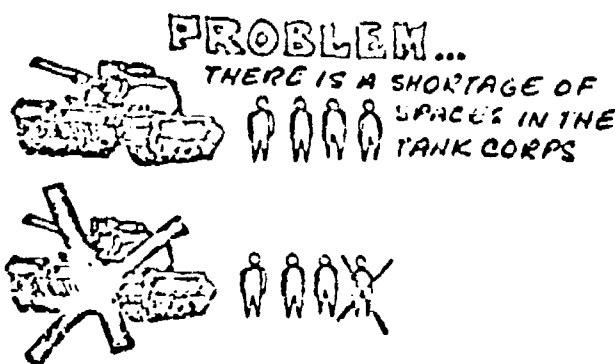


Figure F-6

1. FINDING: THERE IS A SHORTAGE OF AUTHORIZED TANK CREWMEN IN ARMOR UNITS. MANPOWER IS INSUFFICIENT TO OPERATE THE TANK TO ITS POTENTIAL.

DISCUSSION: The most significant personnel finding is that the tank force is not adequately manned. The Tank Weapon System requires four trained crewmen to be effective; remove one crewman and the system becomes less than 50 percent effective. In combat and in peacetime, a full four-man crew is essential to the successful operation of the tank system.

The tank company that enters the battle zone with a full complement of 68 crewmen rapidly loses effectiveness with each crewman lost; there are no trained crew replacements immediately available to the company commander without disrupting a critical combat support function.

The four crewmen in each tank do not provide sufficient manpower to efficiently operate or service the equipment. Maintenance, refueling, and rearming, as well as crew rest (one man awake at all times) detract from the time available for combat. Additional combat power without adding more tanks to the company, will be generated by reducing this service time--this can only be accomplished by adding more crewmen to the company.

To maintain a combat-ready posture in a manpower-short environment, every armor commander invariably resorts to battle rosters--stripping the support capability of the unit to provide full crews. Battle rosters are necessary but dangerous. They provide a delusion of

combat readiness--a chimera that is exposed at the end of each gunnery cycle when battalions, which have reached the peak of their training, are ironically (and universally) given a "recovery" period to catch up on logistics and administrative necessities. The accepted practice of battle rosters is, in itself, a de facto admission of manpower inadequacies.

In peacetime, the tank company that is fortunate enough to have 68 tank crewmen assigned will rarely have many of its tanks fully manned. Leave, SD, sick call, in- and out-processing, details, all extract their share, leaving the commander with a hodge-podge of partially filled crews available for training.

The full crew is essential for training. Individual duties and skills at each of the four positions interact with each other and can therefore be taught and practiced only in the presence of all other crewmen. Effective collective training is also impossible unless all positions are manned.

Operator maintenance requirements in addition to overhead in a tank battalion leave approximately 55 percent of its manpower time available for training and support operations. Either training or maintenance suffer--usually both.

Turbulence in tank crews degrades training, readiness, and morale, yet half of all tank crew turbulence is caused by moves within the unit as the commander shifts his resources to keep his crews balanced and full. Additional crewmen who have trained with the company will reduce turbulence by providing a buffer between the operational crews and the replacement stream, and offset a negative impact of turbulence by providing training continuity.

Authorizations for the armor crewmen MOS provide an E3-E4:E6 ratio of 3:1 (cf., infantry (11B) ratio: 5:1). This low ratio ensures a chronic shortage of E6 tank commanders and institutionalizes a requirement to continue to reclassify E6's from other MOS into armor in order to provide tank commanders. An additional crewman per tank will raise the ratio to 4:1, providing a broader base to meet future NCO requirements.

Soviet tactics and numerical superiority require US tank forces to maximize the time each tank is available for combat. New equipment capable of operating in all weather and visibility conditions provide the opportunity to approach extended round-the-clock operations; however, current manpower is inadequate to exploit that technology advantage. With escalating equipment costs and facing a numerically superior force, the Army must provide the tank force with a force structure that allows it to more closely approach a 24-hour capability.

RECOMMENDATION: *As an interim measure and because of the criticality of this issue, add one additional crewman per tank to each tank company. Conduct analysis of manpower requirement to operate equipment in tank units, test alternatives, and publish new TOE.*

(Interrelates with similar Training and Logistics recommendations).

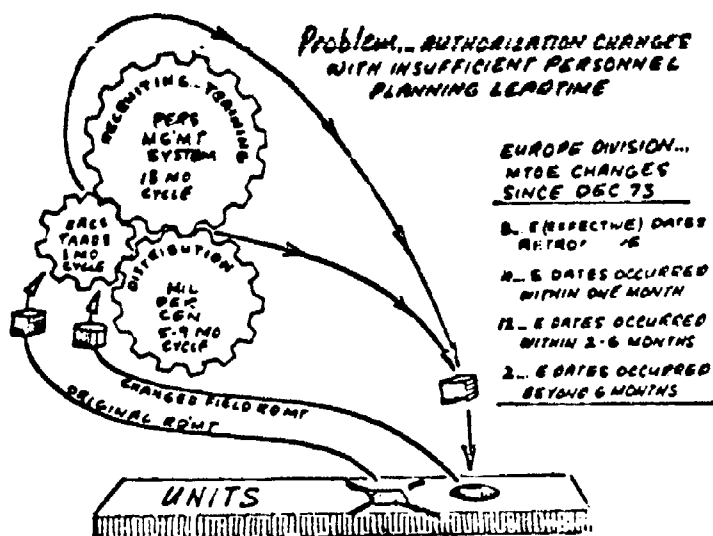


Figure P-7

2. FINDING: AUTHORIZATION DOCUMENT CHANGES, WITHOUT SUFFICIENT PERSONNEL PLANNING LEADTIME, CAUSE INEFFICIENT AND INEFFECTIVE PROCUREMENT, TRAINING, AND DISTRIBUTION.

DISCUSSION: An authorization change (MTOE) entered into the TAADS system is reflected in the following month's PERSACS. Unless the effective date (E-date) of the MTOE change is beyond 6 months of the date it is entered into TAADS, it is unlikely that the distribution system can fill the personnel requisition. If the E-date is within 1 year of the date of entry into the TAADS system, it is unlikely that the training system will be able to produce the appropriate mix of trained personnel to meet the requirements. Sample data taken in November 1976 from one division in Europe (fig. P-7) illustrates this problem. Of 26 recent MTOE changes, only two projected an E-date more than 6 months beyond the date of the change, eight changes were retroactive. The results in this division are predictable--inadequate numbers of trained soldiers in the correct grade and MOS.

RECOMMENDATION: Synchronize MTOE and force structure changes with personnel planning leadtimes. As a minimum, reduce frequency of MTOE changes and extend leadtimes (E-dates).

3. FINDING:..MACOM-DEVELOPED MTOE CHANGES CAN RESULT IN MOS-IMBALANCES
AND INADEQUATE CAREER DEVELOPMENT PATTERNS.

DISCUSSION: MTOE changes which do not affect allocated strength and grade levels can be approved by the MACOM. This approval authority has a significant impact on training and career progression. An example is the current 11D/11E MOS mix in Sheridan crews in Europe. Sheridan crews in the cavalry squadrons in Europe are composed of a mixture of soldiers with MOS 11D (armor reconnaissance) and MOS 11E (tank crewman). This crew mix did not change strength or grade levels, but it placed a new skill requirement for soldiers with 11D MOS at grades E3 and E6. While this solution might have had validity in Europe, its full impact in the Army was to remove these soldiers from the mainstream of their MOS and confound an already difficult 11D career progression pattern.

Since MTOE changes appear in the system one at a time, there is little opportunity for comparison of manpower utilization and effectiveness between and among different types of units. As an example, a USAREUR mechanized infantry battalion (at ALO 1) is authorized more track vehicle mechanics (50) and a higher grade structure than authorized in a tank battalion (45).

RECOMMENDATION: *Review MTOE changes at MACOM and HQDA to ensure armor unit readiness is not degraded by inadequate consideration of the impact on distribution and professional development.*

4. FINDING: THE EFFECTIVE OPERATION OF THE PERSONNEL SYSTEM IS DEGRADED BY NUMEROUS ERRORS IN THE BASIC COMPUTER INFORMATION SYSTEMS.

DISCUSSION: Every function of the personnel system depends to some degree on automated systems and data banks. Preeminent among these are the authorization systems (PERSACS) and the inventory master files (EMF/OMF) (fig. P-8). The validity of the PERSACS is affected by numerous changes to the authorizations documents, the timelag involved in processing these changes, and the short-term planning horizon for force structure changes. Previous and current initiatives by ODCSOPS are improving the validity of the PERSACS; new force development systems such as the Vertical Force Development Management Information System (VFDMIS) should increase accuracy even more.

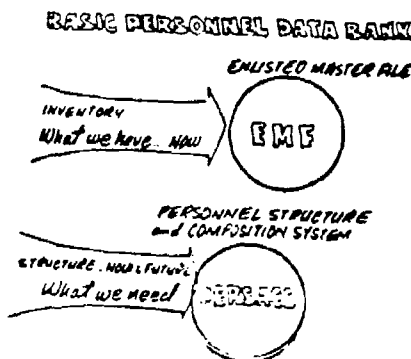


Figure P-8

The validity of the inventory master files directly affects accession management, retention, and distribution. Although the probability of accuracy of an individual data element in a soldier's file may be 97 percent, the errors accumulate such that the likelihood of any soldier having all the necessary data elements correct is less than 8 percent. In fact, samples taken in Europe indicate only 50-60 percent of the soldiers have accurate records.

RECOMMENDATION: Conduct an in-depth analysis of the personnel inventory data base to determine methods to increase accuracy. Include the accuracy of this data base in the special areas of interest by the Inspector General.

5. FINDING: THERE ARE NO SPECIFIC CRITERIA FOR IDENTIFYING KEY PHYSICAL AND MENTAL CHARACTERISTICS FOR TANK CREW MEMBERS.

DISCUSSION: Personnel selection criteria, when coupled with the adoption of a system of discrete training by weapon and crew position, appear to offer great potential for achieving a significant improvement in tank crew performance. It is known, for example, that some crewmen can become better gunners than others. It is possible that individual talents can be more effectively used by screening prospective crewmen prior to training to identify those with aptitude for particular positions, and to exclude from the tank force those who are physiologically unsuited. A thorough task analysis of each tank crew position may lead the way to improved aptitude and/or psychomotor skills tests for use in predicting successful armor crew duty performance when a soldier enters the Army.

RECOMMENDATION: *Develop physiological tests to identify potential armor crewmen with a high aptitude for tank crew position duties.*

(Interrelates with similar Training recommendation).

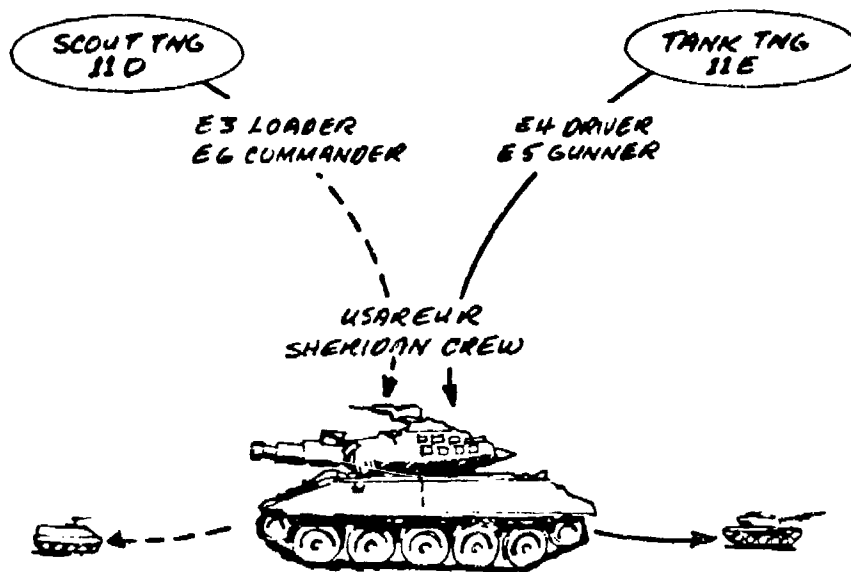


Figure P-9

6. FINDING: THE MULTIPLICITY OF JOB SKILLS REQUIRED TO BE PERFORMED BY ARMORED CAVALRY SOLDIERS (MOS 11D) PRECLUDES EFFECTIVE TRAINING AND CAREER PROGRESSION.

DISCUSSION: Current MTOE in USAREUR requires armor reconnaissance soldiers (11D) to crew the Sheridan as loaders (E3) and commanders (E6/E7). This situation disrupts career progression for 11D and confounds the unit training program for Sheridan crewmen. The Sheridan is a complex weapons system that requires well-trained and experienced crewmen. The current practice ensures a continuous flow of untrained, inexperienced crewmen at each position.

The 11D soldier is required to operate a multiplicity of weapons including the DRAGON, TOW, 20mm cannon, and caliber .50 machinegun. He is mounted on M113A1's, M114A2's, or scout jeeps in varying organizations. Adding the Sheridan to his list of required skills dilutes his technical proficiency.

RECOMMENDATION: Develop a separate MOS for Sheridan crewmen and reduce the proliferation of cavalry organizations and equipment.

(Interrelates with similar Training recommendation).

7. FINDING: SHORTAGES IN MAINTENANCE AUTHORIZATIONS DEGRADE
ARMOR UNIT READINESS AND COMBAT CAPABILITY.

DISCUSSION: The development of the Tank Battalion TOE has been an evolutionary process conducted under almost continuous pressure to reduce manpower. As a result, the tank company and battalion of 1977 have fewer personnel than tank units in 1948 despite equipment of vastly increased complexity and capability. Maintenance personnel are allocated on the basis of the Manpower Authorization Criteria (MACRIT) contained in AR 570-2. The MACRIT is based on old engineering estimates unsubstantiated by field experience. It indicates, for example, that an M113 personnel carrier requires almost as many annual maintenance man-hours (646) as a main battle tank (748) and more than a 155mm SP Howitzer (633). The MACRIT includes only organizational maintenance personnel and does not consider operator/crew maintenance. As a result of the shortage of maintenance manpower, tank units resort to extraordinary measures to maintain operational readiness rates. These include reducing training time to perform additional maintenance, massive amounts of overtime spent in the motor pool, and inadequate performance of quarterly services.

RECOMMENDATION: *Develop new criteria for the allocation of maintenance personnel (MACRIT). Include crew maintenance man-hour requirements in the MACRIT. Develop improved procedures for providing qualified maintenance personnel to armor units.*

(Interrelates with similar Training and Logistics recommendations).

8. FINDING: THE IMPORTANCE OF THE PLL CLERK'S DUTIES WARRANTS
ESTABLISHING A HIGHER GRADE FOR PLL POSITIONS IN
ARMOR UNIT TOE.

DISCUSSION: Current authorization documents provide for skill level 1 PLL Clerks (E3 or E4) in tank units. One PLL Clerk is assigned to each tank company and armored cavalry troop; however, there is no supervisory position in this MOS (76D) in the battalion or squadron. The operation of the repair parts supply system is an exacting and complex task, and one that is critical to the operational readiness of the unit. The Army has a huge resource investment in the repair parts system but places the entire system into the hands of a PFC or SP4 who initiates the requisition. This example of one functional system (personnel) degrading another (logistics) can be rectified by increasing the grade level of the PLL Clerk. The impact on the 76D MOS in terms of sustainability and promotion-flow is minimal and positive. Authorizations:

	<u>Current</u>	<u>Proposed</u>
76D10	9100 (85%)	8850 (81%)
76D20	1400 (15%)	1650 (19%)

RECOMMENDATION: *Establish the armor unit PLL Clerk's position at grade E5.*

(Interrelates with similar Training and Logistics recommendations).

9. FINDING: REQUIREMENTS FOR ARMOR OFFICERS ARE NOT NECESSARILY REFLECTED IN AUTHORIZATION DOCUMENTS.

DISCUSSION: Duty positions at corps and other intermediate headquarters specify requirements for officers with functional specialties. Under OPMS, each field grade officer has two specialties, but unless the headquarters authorization document specifically requires the 12A-Armor specialty, the assignment of an armor officer to that headquarters in his secondary specialty is left to a matter of chance. VII Corps Headquarters, for example, has no armor officers in the grade of COL, and only one in the grade of LTC. Armor officers in the grades of COL and LTC are available for assignment and will be distributed in accordance with requirements; however, only if authorization documents specifically identify the armor specialty will a valid requirement exist.

RECOMMENDATION: *Review corps headquarters authorization documents to ensure that requirements for armor COL's and LTC's are expressed in the documents.*

TRAINING

The training of Army personnel is a dynamic process in which virtually every Army staff agency and major command participates. Staff responsibility for training is split between ODCSPER, for the classification system and individual training, and ODCSOPS, for collective training. TRADOC is responsible for training doctrine and institutional training while each MACOM has responsibilities for implementing collective and certain individual training programs. The following discussion addresses the ODCSPER-related responsibilities.

INITIAL ENTRY TRAINING

Enlisted initial entry training is conducted in one of two ways: separate basic combat training (BCT) and advanced individual training (AIT); or one-station unit training (OSUT). Where training is other than OSUT, assignment to an AIT is made by MILPERCEN, using information provided by the Army Training Center (ATC) during the early stages of BCT. Initial training for officers consists of attendance at a branch officer basic course (OBC).

TRAINING REQUIREMENTS

The development of enlisted training requirements requires an assessment of the future requirements (PERSACS) and the composition of the current inventory (EMF). The system which performs this assessment is the Personnel Inventory Analysis Model (PIA II). The output from PIA II is combined with officer, reserve component, and functional training requirements to produce the Army Program for Individual Training (ARPRINT). This document has replaced the "White Book" conference and is an automated semiannual directive from HQDA to TRADOC.

Improvements are needed in the classification and training of armor officers and crewmen to ensure they are qualified assets when assigned to a unit from the training base or upon reclassification. The following findings address these improvements.

10. FINDING: . DISCRETE CLASSIFICATION AND TRAINING ARE REQUIRED FOR DIFFERENT ARMOR WEAPONS SYSTEMS AND CREW POSITIONS.

ONE-STATION UNIT TRAINING (OSUT) FOR ARMOR CREWMEN DOES NOT PRODUCE TANKERS QUALIFIED BY DISCRETE WEAPON OR DUTY POSITION.

ARMOR OFFICER BASIC COURSE (AOBC) GRADUATES ARE NOT TECHNICALLY QUALIFIED TO BE TANK COMMANDERS OR PLATOON LEADERS.

DISCUSSION: Initial entry armor soldiers may be assigned to three different crewman positions on five different vehicles (fig. P-10). Most skill requirements for these various duty positions are unique to each position; the overlap between skill requirements of tank drivers and tank gunners, for example, is relatively small. An even greater gap in skill requirements exists between crewmen on different types of vehicles. The current system familiarizes entry level soldiers with tanks, but does not train them to be technically proficient at any one position. Graduates of OSUT must receive considerable training in individual skills after they are assigned to units, an unacceptable situation for wartime replacements.

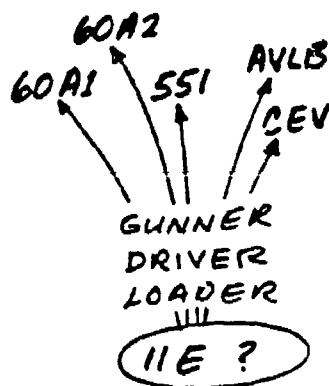


Figure P-10

In order to train armor soldiers for specific crew positions, the classification structure must be changed to allow the personnel system to procure, train, and distribute in the proper quantities.

A separate enlisted Career Management Field (CMF) is required to reduce the armor-infantry MOS crossover at the senior NCO level caused by current promotion policy which operates on a "best-qualified within CMF" basis.

Armor platoon leaders must be more than leaders on the battlefield; they must be proficient tank commanders. Twenty percent of the tank force firepower is provided by the platoon leader's tank. Training of junior officers to the required skill level in the Armor Officer Basic Course (AOBC) will require a system-specific approach. The officer classification system must be able to identify the skills of the officer by type unit and by type vehicle.

RECOMMENDATION: Establish a separate career management field for armor crewmen and armor reconnaissance specialists which identifies specific skills for specific positions on discrete tanks and other armored vehicles. Introduction of this armor C4F should be coordinated with the initiation of weapon system-oriented initial entry training for armor crewmen.

Establish Specialty Skill Identifiers (SST's) for armor officer position identification and career management. Coordinate their introduction with the initiation of weapon system-discrete AOBC.

(Interrelates with similar Training recommendation).

11. FINDING: MANAGEMENT DEFICIENCIES IN TRAINING AND DISTRIBUTION
HAVE RESULTED FROM USING ADDITIONAL SKILL IDENTIFIERS
(ASI'S) AND SPECIAL QUALIFICATION IDENTIFIERS (SQI'S).

DISCUSSION: Training requirements for ASI's are not developed through the PIA-ARPRINT process--they are estimated. ASI-producing courses for initial entry armor trainees are 3-week add-ons to OSUT. ASI distribution, particularly R8 (Sheridan) and W1 (M60A2), is ineffective when compared with three-digit MOS distribution. Initial identification and retention of ASI codes in the computerized data bases is difficult to accomplish and subject to high error rates.

RECOMMENDATION: *Classify and distribute armor skills in accordance with discrete MOS.*

12. FINDING: A FORMAL TRAINING PROGRAM IS REQUIRED TO DEVELOP TECHNICAL PROFICIENCY IN NONCOMMISSIONED OFFICERS RECLASSIFIED FROM OTHER MOS'S INTO ARMOR.

DISCUSSION: To meet requirements for tank commanders, NCO's from other MOS's have been reclassified into MOS 11E. This program represented 14 percent of armor E5/E6 operating strength in FY76 and has been accomplished without sufficient formal training. The shortage of armor NCO's at the E5 and E6 levels, coupled with increasing future requirements for tank commanders, indicate further reclassification programs will be needed. The duties of the tank commander require complete technical expertise in the weapons system which is not being accomplished by a quick OJT period in units--the present qualifying method. Fig. P-11 highlights the disparity in tank unit experience and education between the tank commander who has "grown up" in armor units and the NCO reclassified into MOS 11E to meet the shortage of tank commanders.

RECOMMENDATION: Develop a formal course of instruction to provide technical proficiency for NCO's reclassified into armor MOS.

(Interrelates with similar Training recommendation).

TANK COMMANDERS

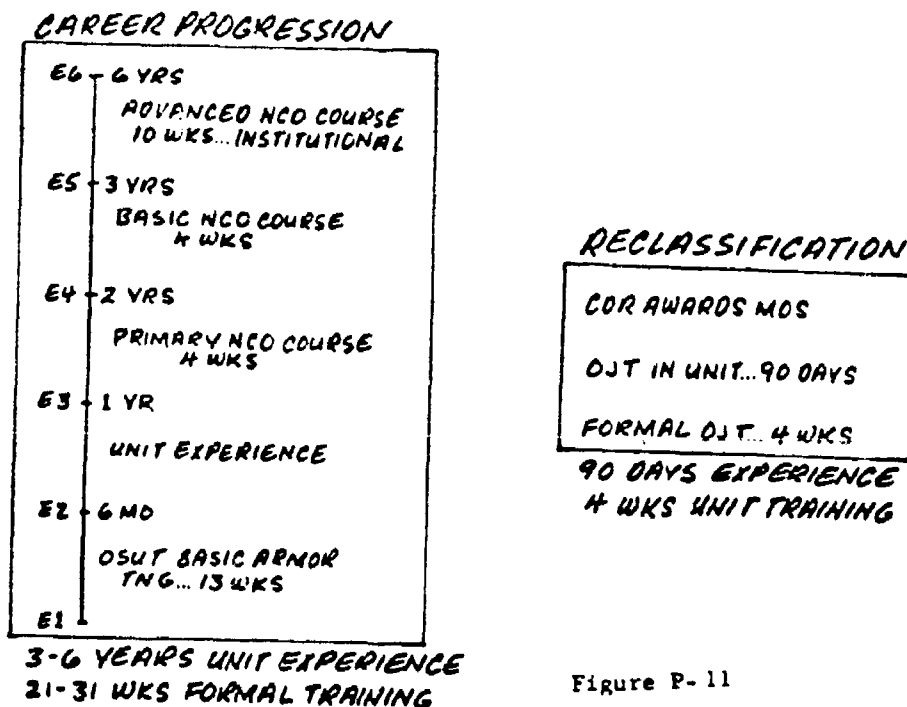


Figure P-11

13. FINDING: COMMANDERS AT BATTALION AND COMPANY LEVEL REQUIRE TRAINING IN PERSONNEL OPERATING SYSTEMS AND PROCEDURES.

DISCUSSION: Personnel management instruction is not a prerequisite for battalion or company commanders even though these commanders are the Army's personnel managers and spend a significant percentage of their time dealing with personnel-related issues.

The personnel system consists of a complex array of information systems and operating procedures which are established and described by numerous publications, frequently changed, and not well understood outside of personnel management offices. Commanders have a vital role in all functions of the system, but few new commanders understand the system or their responsibilities within it.

Staff assistance is provided the commander by the adjutant, the personnel services NCO, and the senior noncommissioned officers in the battalion. Except for the PSNCO, none are formally trained in the personnel system.

Improvements can be made by reexamining the personnel system training at officer and NCO schools and courses. Special instruction or training packages should be made available to and mandatory for future battalion commanders and adjutants.

Commanders will be assisted if they are provided a Personnel System User's Guide which clearly and succinctly describes their duties and options as they pertain to personnel management. Such a guide, in the form of a DA publication should be designed as a desk top reference for unit commanders in the same manner as Field Manual 27-1, Legal Guide for Commanders.

RECOMMENDATION: *Develop a program to increase the level of knowledge of the personnel system in battalion and company commanders.*

(Interrelates with similar Training recommendation).

DISTRIBUTION

The objective of the distribution function is to provide the proper mix of personnel from available assets to fill field requirements. This system is basically dependent on field requisitions to generate requirements for assignment. In the distribution cycle, there are three critical factors which determine the success or failure of the system (fig. P-12):

- (1) Properly identified and timely submitted requirement by units.
- (2) Accuracy of the authorizations and personnel inventory data bases.
- (3) Support at all command levels through the reduction of diversions.

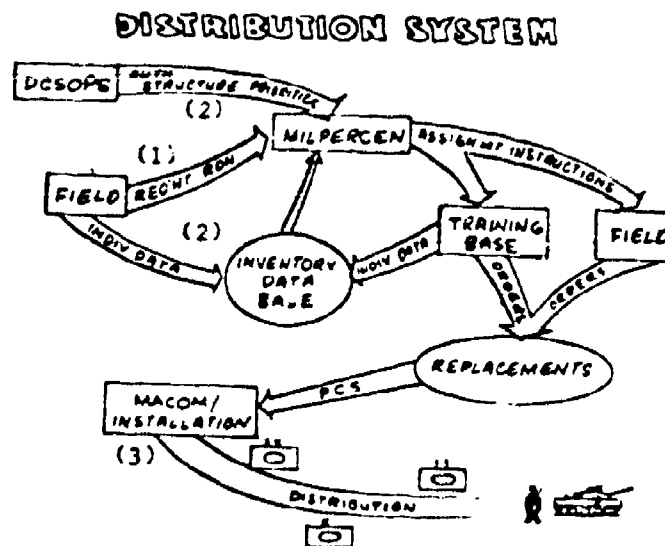


Figure P-12

Officers are allocated to major commands and activities by specialty and grade, and warrant officers by MOS. In the grades of CPT-COL, accountable strength by grade is subjectively divided into thirds (U/3 - M/3 - L/3). After subtracting those individuals assigned to nominative positions (OSD, JCS, Attaches, etc.), the remaining officers, by category, are distributed equitably throughout the Army, based upon the Projected Requisitioning Authority (PRA).

DISTRIBUTION PLANNING

An enlisted distribution plan is prepared monthly. It reflects the current enlisted strength of each MACOM and division and their forecasted strength-status 8 months in the future. Personnel available during the period of the plan are allocated to each command based on its requirements and the distribution objective established by ODCSPER.

INITIAL ASSIGNMENT

Assignment instructions for each trainee are generated by qualification and availability information provided MILPERCEN by the Army Training Centers (ATC's) during the first week of Advanced Individual Training (AIT) or seventh week of One-Station Unit Training (OSUT). The specific assignment is made either in response to an enlistment commitment or as a result of a validated requisition submitted by the field.

SUBSEQUENT ASSIGNMENTS

In response to validated requisitions from the field, MILPERCEN makes assignments of personnel to fill projected or actual vacancies considering such factors as availability (eligibility), individual desires, and priorities established by DCSOPS and DCSPER. An enlisted Personnel Deployment and Distribution Management System (PERDDIMS) is currently under development to replace the existing Centralized Assignment Procedures (CAP III) System. It will distribute personnel to the field based on requirements determined at DA-level from EMF and PERSACS data. In effect, a reversal of the current system that depends on field-generated requirements.

Officers receive assignments in essentially the same manner as enlisted personnel. An additional factor considered by MILPERCEN in making officer assignments is the actual status of commands in relation to their projected requisitioning authority (PRA), a "fill" objective for each command that allocates available resources on a priority basis.

The procedures followed in the distribution of armor officers and enlisted men are identical to those used for all MOS's.

Some improvements in this area of personnel management are required so the armor force will receive the right people when and where they are needed.

14. FINDING: NOT ALL SENIOR NCO'S ASSIGNED TO ARMOR BATTALIONS ARE
BRANCH-QUALIFIED.

DISCUSSION: Since 1973, 20 percent of the E7's selected for promotion and assigned as armor first sergeants have been from other than MOS 11E. Battalion commanders decry this situation which places nonbranch-qualified NCO's in senior enlisted leadership positions, especially in the CABL environment where first sergeants are expected to be trainers.

An EMF query in early January 1977 of 37 tank/cavalry battalion command sergeants major indicated that 14 CSM's had prior armor experience, 13 did not, and 10 had blank entries. A breakout by MOS of the CSM's with other than armor experience is as follows:

Radio Teletype Operator (05C)	2
Infantryman (11B)	2
Combat Engineer Senior Sergeant (12Z)	2
Transportation Senior Sergeant (64Z)	1
Legal Clerk (71D)	3
Intelligence Analyst (96B)	<u>3</u>
Total	13

RECOMMENDATION: *Assign only branch-qualified command sergeants major (CSM's) and first sergeants to armor battalions/ cavalry squadrons.*

(Interrelates with similar Training recommendation).

15. FINDING: A PROGRAM IS NEEDED TO MANAGE THE ASSIGNMENT, CLASSIFICATION, AND TRAINING OF ARMOR SOLDIERS IN A SPACE-IMBALANCED ENVIRONMENT, ESPECIALLY M60A2 AND M551 CREWMEN.

DISCUSSION: Implementation of an armor career management field (CMF) will highlight a space-imbalance problem which currently is disguised by having a single MOS (11E) for all different tank weapons systems. For example, under the armor CMF, the M60A2 weapon system will consist of two MOS's--one for the gunner/loader and one for the driver. Currently, there are six M60A2 battalions in Europe and one in CONUS (fig. P-13). To determine the number of spaces required in CONUS and Europe to ensure a 24-month and 36-month tour respectively, personnel managers use the following formula:

$$2/3 \text{ long tour} + 2 \text{ short tour} = \text{CONUS Sustaining Base}$$

This formula shows that CONUS requires approximately 1,004 11E(W1) spaces rather than the current 251 spaces. This situation will adversely impact on morale and reenlistments unless positive steps are initiated. Procedures for assigning by secondary MOS, or some other refinement to the current distribution process, will be needed. Further, a means for assessing the true cost of an imbalance in weapons systems needs to be developed in terms of either degradation in readiness, or in transition training required. Initial equipment fielding decisions should address these costs.

RECOMMENDATION: Develop alternative methods for managing space-imbalanced MOS/AS1. Establish a positive decision-step for personnel readiness input to the equipment deployment decision process.

(Interrelates with similar Training recommendation).

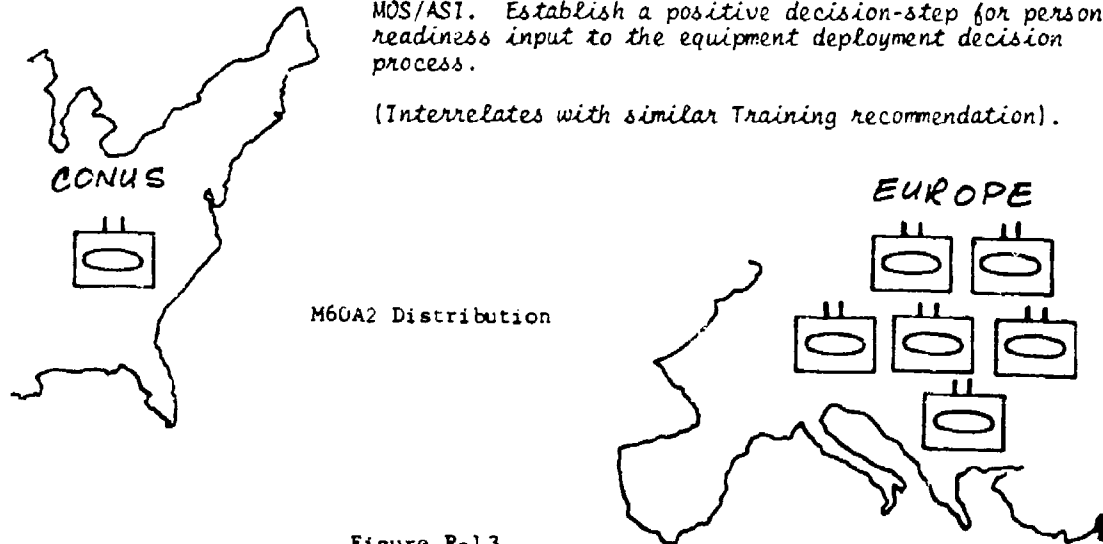
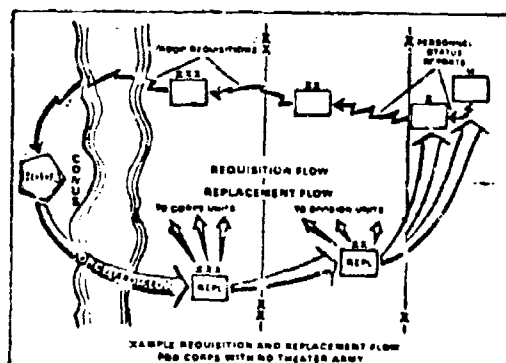


Figure P-13

16. FINDING: ENLISTED ASSIGNMENT INSTRUCTIONS ARE NOT VALIDATED BY THE LOSING COMMAND PRIOR TO BEING ISSUED BY MILPERCEN.

DISCUSSION: Assignment nominations which have been approved by MILPERCEN MOS managers are transmitted to both the gaining and losing commands simultaneously. The losing command is responsible for verifying the individual's qualifications and eligibility. In theory, this CAP III program should work almost perfectly, especially if relatively few individual qualifications turn out to be other than represented on the EMF. However, there are numerous errors in the data base, which manifest themselves in a high number of erroneous assignment instructions to USAREUR.

RECOMMENDATION: *Modify the CAP III system to delay transmitting assignment instructions until the assignment has been verified by the losing command.*



SOURCE: FM 100-5, Page 12-8

Figure P-14

17. FINDING:

THE PERSONNEL MANAGEMENT SYSTEM IS ORGANIZED FOR PEACETIME EFFICIENCY, NOT WARTIME EFFECTIVENESS; IT LACKS A WARTIME REPLACEMENT SYSTEM.

DISCUSSION:

WARTIME ADP SHORTFALLS

SIDPERS... OVERLOADED

RESERVE COMPONENTS... LACK TRAINING
EQUIPMENT... SOFTWARE

VULNERABILITY... OF HARDWARE

POLICIES... ILL DEFINED

SOFTWARE and EQUIPMENT...
NOT SUSTAINABLEPROCEDURES... DIFFERENT BETWEEN
RES COMP and ACTIVE ARMYSOURCE: WARTIME MIS CONFERENCE
22-25 FEB 1977

Figure P-15

The Army's peacetime assignment-replacement system is designed to provide individual replacements to units worldwide in response to requisitions. Assignments to Europe for grades E4 and below are made to the 21st Replacement Battalion. Advance "pinpoint" assignments are made for E5 and above to units prior to their incountry arrival. During wartime, a "push" replacement system will be employed initially to bring the commands up to strength. It will be followed by HQDA-estimates and field requisitions to maintain strength in the commands. All assignments would be initially to the theater for further allocation to units (fig. P-14).

The current USAREUR organization for personnel administration was developed under the regionalized Personnel Services and Support (PSS) concept. In this concept, Area and Regional Personnel Centers (APC) and (RPC) provide support to divisional and nondivisional units on a regional basis. This purpose is to provide "one-stop" service to the soldier. This system provides effective peacetime services to the soldier but lacks a transition plan for wartime.

ADP systems which support personnel management follow the same "peacetime efficiency" pattern. Significant shortfalls in functional policies and associated ADP systems (fig. P-15) preclude effective operation during general war or mobilization.

RECOMMENDATION:

Develop a wartime replacement system.
(Interrelates with similar Logistics recommendation).

Problem... LIBERAL SUBSTITUTION RULES DISGUISE EFFECTS
OF MOS and SKILL LEVEL MISMATCH

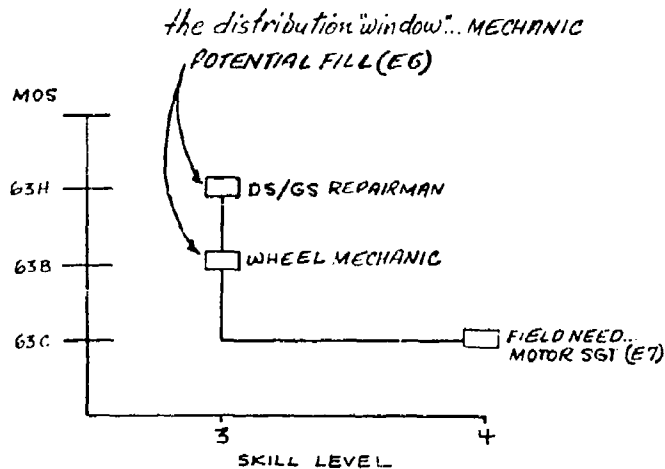


Figure P-16

18. FINDING: LIBERAL SUBSTITUTION RULES HAVE DISGUISED THE EFFECTS
OF MOS AND SKILL LEVEL MISMATCH.

DISCUSSION: A soldier is considered to be properly utilized when working in his PMOS, SMOS, AMOS, substitutable MOS or career progression MOS, or in an OJT-status. The cumulative effect of these broad utilization rules and fewer MOS's (a goal of EPMS) has been a personnel management boon but a hardship for the soldier. Grade substitution rules allow soldiers to serve in positions authorized two higher grades (E5 for E7) in their primary MOS or one grade higher in a substitutable MOS. AR 611-201, Enlisted Career Management Fields and Military Occupational Specialties, states that MOS 63C (Track Vehicle Mechanic) is substitutable with MOS 63B (Wheel Vehicle Mechanic), MOS 63G (Fuel and Electrical Systems Repairman), and MOS 63H (Automotive Repairman). This policy allows the system to provide an E6 63H to a tank unit requiring an E7 63C Motor Sergeant (fig. P-16); an assignment which should be made only under extraordinary circumstances and which should be reflected as an MOS mismatch.

RECOMMENDATION: Restrict grade substitution in armor and maintenance MOS to 1 skill level for MOS "match." Restrict MOS substitutions in enlisted assignments to tank battalions.

(Interrelates with similar Logistics recommendation).

19. FINDING: THERE IS A SHORTAGE OF INSTRUCTOR TANK COMMANDERS
(GRADE E6) AT THE ARMOR TRAINING CENTER.

DISCUSSION: Currently, the Armor Training Center is short 219 armor NCO's in grade E6, 117 of these are instructor tank commander positions. In order to partially fill this shortage, the Center holds some of the top graduates in each class to act as tank commander-instructors for succeeding classes. Each holdover tank commander trains 18 armor trainees in each class. During the last year, the average number of holdovers has been 55; the current number is 63. Out of an average cycle-strength of 2700 trainees, 990 are trained by holdovers. This situation guarantees less than effective initial entry training for over one-third of the Center's yearly output.

Improving the technical proficiency of OSUT graduates by training them by position and specific weapon system requires sufficient qualified instructors. The current situation where over one-third of the trainees are trained by recent graduates must be corrected.

RECOMMENDATION: *Assign the required number of E6 instructor tank commanders to the Armor Center and maintain them at full strength on a priority basis.*

(Interrelates with similar Training recommendation).

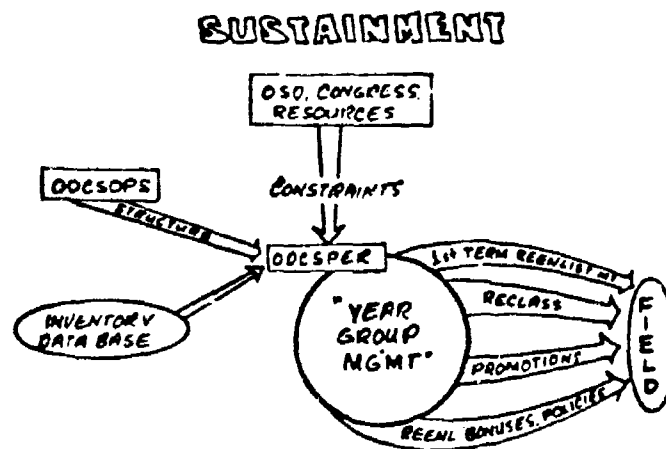


Figure P-17

The objective of the sustainment function is to develop and maintain the career force to best meet the readiness requirements of the Army in the field. It consists of the policies and programs which affect the utilization, discipline, morale, and welfare of the soldier. The focal point for enlisted sustainment policies and programs is the Enlisted Force Management Plan (EFMP), which provides qualitative and quantitative goals for the Army for the period FY73-FY82. Although several important programs have been implemented as part of the EFMP, such as the Enlisted Personnel Management System (EPMS) and Years-of-Service (YOS) Management, several deficiencies have been uncovered in this functional area which impact on the tank force.

20. FINDING: TANK CREW TURBULENCE DEGRADES ARMOR UNIT COMBAT
READINESS; VERTICAL PROGRESSION (GRADE MATCHED TO
CREW POSITION) CONTRIBUTES TO UNIT/CREW TURBULENCE.

DISCUSSION: Turbulence is a product of both external and internal factors. Externally, the individual replacement system and centralized promotions contribute to tank crew turbulence while internally, within the battalion, position changes, because of promotions and unprogrammed losses, also cause turbulence. The cumulative effect of these factors is to destabilize the tank crew--a fighting team whose proficiency is dependent upon crew training and teamwork.

RECOMMENDATION: *Modify the tank unit TOE to provide for progression to grade E5 in any tank crew position.*

[Interrelates with similar Training recommendation].

21. FINDING: CURRENT TANK UNIT TABLES OF ORGANIZATION AND EQUIPMENT (TOE) SPECIFY THE GUNNER POSITION AS AN NCO (SERGEANT E5) POSITION. TO PROMOTE AN ARMOR E4, COMMANDERS MUST PROMOTE TO SERGEANT.

DISCUSSION: This finding pertains to the shortage of authorized E5 gunners in the tank force despite the existence of a large pool of E4's who meet time-in-grade criteria for promotion. Commanders in the field hesitate to promote a soldier who is technically proficient and otherwise qualified to perform as gunner, but who lacks the leadership and maturity expected of a noncommissioned officer. A viable alternative would be the option to promote deserving soldiers to specialist five and award the NCO designation when warranted.

RECOMMENDATION: *Conduct a feasibility test of a policy change which would enable armor unit commanders to promote tank gunner/drivers to grade E5 as either specialists or sergeants. Designate a percentage of the positions as specialist permitted.*

22. FINDING: VISUAL ACUITY STANDARDS FOR THE RETENTION OF ARMOR CREWMEN ARE NOT AS RIGID AS THOSE FOR ENLISTMENT.

DISCUSSION: Physical standards for the visual acuity of armor crewmen require an eye profile of 1 at initial entry into the Army. This standard is not maintained during the crewman's career, as it is easily waived by commanders at reenlistment points.

The capability to acquire targets and adjust fire is a critical requirement for armor crewmen, especially for the tank commander. A test performed by the Naval Weapons Center, China Lake, California highlighted the direct relationship which exists between visual acuity and target acquisition time. It suggests that a crewman with 20/20 eyesight will identify armor targets at 1200 meters more than twice as fast as crewmen with 20/30 vision.

RECOMMENDATION: *Develop visual acuity standards based on target acquisition performance requirements for armor crewmen/officers.*

23. FINDING: THERE IS A REQUIREMENT FOR AN OPERATIONAL UNIFORM FOR ARMOR CREWMEN.

DISCUSSION: This finding addresses two distinct aspects of an armor uniform. The first is safety. As the Mid-east War demonstrated, armor crewmen are subject to a high number of burn injuries and require protective clothing, such as the NOMEX now issued to Army aviators. The second factor is ease of operation. The standard issue load-bearing equipment provided under CTA 50-900 is not compatible with a crewman's duties in and around the tank.

RECOMMENDATION: *Develop a program for early procurement and distribution of a tanker's uniform.*

24. FINDING: RECLASSIFICATION AT E6 LEVEL IS DISRUPTIVE, LOWERS MORALE, AND PRODUCES A TANK COMMANDER WITH LIMITED EXPERIENCE.

DISCUSSION: When soldiers are promoted to grade E6, they achieve a major leadership role in their area of expertise. If force-structure changes or other reasons cause their skills to no longer be needed, they are reclassified. This action normally causes a delicate leadership problem. Not only do they naturally resist and resent the change, but they also face an uncertain future because there is no program to provide them with formal schooling in their new MOS. The current OJE/OJT in units is not uniform and does not produce a confident, technically competent tank commander. Reclassification of soldiers at the E5 level will be less disruptive and produce better armor noncommissioned leadership. Projections of E6 requirements and inventories can be made sufficiently early to allow reclassification at grade E5.

RECOMMENDATION: *When reclassification is required, limit this action to the E5 grade level.*

(Interrelates with similar Training recommendation).

25. FINDING: FUTURE REQUIREMENTS FOR ARMOR CREWMEN CANNOT BE ACCURATELY DETERMINED BECAUSE ARMOR MOS CONTINUATION RATES HAVE NOT BEEN DEVELOPED.

DISCUSSION: One of the tools used by personnel managers in analyzing the current status of a CMF/MOS is Army-wide continuation rates. Continuation rates are factors which describe or predict how many soldiers in a certain year-group will remain in the Army (or in the MOS) 1 year later. These Army-wide rates fail to present an accurate picture of the projected strength status of an armor MOS. To improve the analysis capability, personnel managers must develop, and revise, continuation rates by MOS.

RECOMMENDATION: Determine MOS continuation rates for armor crewmen.

SEPARATION

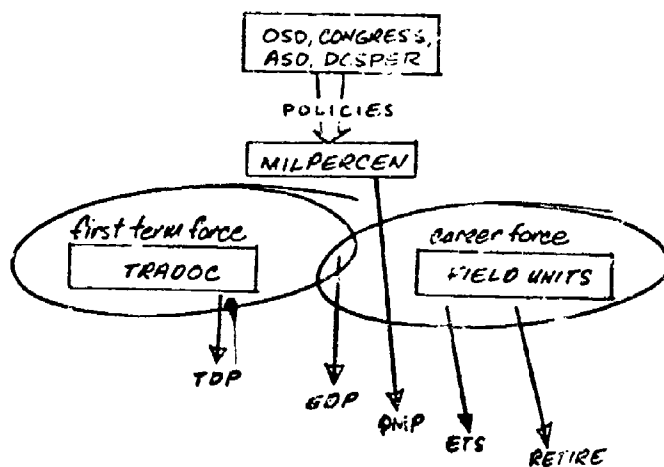


Figure P-18

No issues in this process have been identified which adversely impact specifically on the tank force. It is included here merely to make the analysis of the personnel subsystem complete.

MANAGEMENT

A number of personnel management system deficiencies have been identified which do not pertain to any single functional area. These deficiencies which impact directly or indirectly upon the tank force also have Army-wide management implications.

25. FINDING: THE PERSONNEL MANAGEMENT SYSTEM LACKS A WEAPON-SYSTEM ORIENTATION.

DISCUSSION: Department of the Army personnel managers focus on Army-wide strength levels and overall MOS balance. Their objective is to provide personnel to fill requisitions, not units. The mission of assigning soldiers to authorized duty positions commensurate with their MOS is the responsibility of the field commanders.

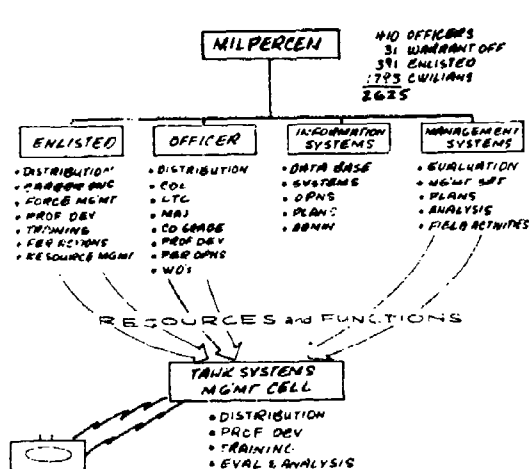


Figure P-19

Commanders, however, have no control over the resources they receive, and no central point with whom to communicate at DA. Each enlisted MOS and officer specialty has a different manager--weapons systems have no managers. An example of the problems this situation can create occurred when MOS 63C was overstrength Army-wide, but critically short at Fort Hood. There, an NCO was reclassified from MOS 63C (tracked vehicle mechanic) into armor, even though armor was overstrength and 63C understrength at the installation. The lack of a centralized personnel weapon system orientation results in policies and actions which suboptimize personnel processes without considering the impact on the weapon system. This disconnect between personnel management and the weapon system degrades the combat capability of the force in the field.

Equally important is the requirement that personnel management for a weapons system must complement and mesh with the other management systems which support the weapon. A communications and control network must be established between the various functional management systems to focus and integrate the processes of these systems into a coordinated weapons-system approach. A typical management office might take the form envisioned in fig. P-19.

RECOMMENDATION: Organize a tank management office (personnel) within MILPERCEN, ODCSPER, and selected MACOM.

(Interrelates with similar Logistics and Management recommendations).

101-111111-111111

27. FINDING: ARMOR BATTALION READINESS REPORTS ARE NOT CONSIDERED
IN MAKING ARMOR PERSONNEL ASSIGNMENTS.

DISCUSSION: The data reported in accordance with AR 220-1 does not provide information by grade on MOS-shortages in determining personnel readiness. In addition, this report is not forwarded to HQDA but combined statistically with other division units. Under this existing system, personnel managers receive no feedback which would permit exceptional management techniques to correct problems with readiness implications.

RECOMMENDATION: Report armor unit personnel status in unit readiness reports by 4-digit MOS; surface battalion level reports at DA-level.

(Interrelates with similar Training recommendation).

28. FINDING: THERE IS NO INTEGRATED REVIEW AND ANALYSIS CAPABILITY
WITHIN THE PERSONNEL MANAGEMENT SYSTEM.

DISCUSSION: Although an evaluation of the impact of a personnel management program upon the rest of the personnel system is accomplished whenever an issue is surfaced or problem occurs, the personnel management community lacks a systematic review and analysis capability. The conflicting impacts of recruiting, reclassification, retention, and tour lengths are not assessed in a methodical, periodic briefing for executive committee members. In one functional area, the monthly enlisted distribution briefing serves as a forum for review and analysis while ad hoc policy committees address some others. There is, however, no vehicle or process to bring them together or provide functional comparisons or feedback.

RECOMMENDATION: *Develop a capability to evaluate the impact of conflicting personnel management programs and integrate existing systems.*

CONCLUSIONS

Personnel management is functionally oriented; its organization, goals, and procedures are separated by function for efficiency and managability. This approach applies the same level of management intensity to all units and systems throughout the Army. It works reasonably well.

Some weapons systems, however, are more sensitive to minor fluctuations in the personnel system than others -- the tank weapons system is one of these. Because of the structure of its crews and because it is a capital intensive system, an imperfectly functioning personnel system degrades the combat capability of the tank out of proportion with the actual number of people involved. To extract the full potential of the tank hardware, manpower must be precisely managed. Standards and measurements must be applied to the combat effectiveness of the tank unit, not the functional effectiveness of personnel management. Feedback and control mechanisms are required to fine-tune the various personnel system processes as they apply to the tank force.

Innovations and improvements in the personnel system will have full impact in the tank force only if they are closely integrated with the proposed improvements in the training and logistics systems. A total weapons system approach is essential in order to derive maximum benefit from personnel recommendations.

DEFINITIONS

ACRONYMS

- ACT - Automated Control of Trainees System. A system which collects data on enlisted trainees during the first week of basic training and at a prescribed time generates a roster of available trainees for assignment which is coordinated with CAP III.
- ARPRINT - Army Program for Individual Training. A document which contains all training requirements officer and enlisted (Army), Active and Reserve components, other Services, foreign nationals and civilian, for all MOS and functional Army training courses.
- ASI - Additional Skill Identifiers. The ASI is identified by a two-digit code, a letter and a number, and identify specialized skills that are closely related to and are in addition to those required by the MOS/SSI.
- CAP III - Centralized Assignment Procedures III. An automated nomination/assignment system which compares the qualitative requirements as recorded on requisitions against available assets resulting in a selection/assignment.
- COMPLIP - Comparison of Manpower Programs Using Linear Programming. Called the manpower program, is produced monthly and is the personnel document for the Military Appropriation, Army Budget, the Five-Year Defense Plan, Program Objective Memorandum and also determines recruiting objectives for the Army.
- CONAF - Conceptual Design of the Army in the Field. A planning model which designs and analyzes theater forces constrained by cost.
- DAMPL - DA Master Priority List. Prepared annually and displays major commands, activities and units in a relative order which determines priorities for the allocation of resources.
- EDF - Expeditious Discharge Program. Personnel management program to eliminate nonperformers in units from 6 to 36 months service.
- EMF - Enlisted Master File. A centralized data bank containing personnel information on the current inventory of the Active Army enlisted force.
- EPMS - Enlisted Personnel Management System. Current system for the professional development of the enlisted soldiers. Key features of this system include:
- Standardized skill level/grade relationship.
 - Qualification tests as a prerequisite for promotion to the next higher grade.
 - Five levels of training/basic combat training plus four levels of NCOES.

ACRONYMS

- FAS - Forces Accounting System. An automated multiple force system which lists current and programmed units in the Army and its associated aggregate strength (officer, warrant officer, enlisted).
- MACRIT - Manpower Authorization Criteria. The number of direct workers required to effectively perform a specified work activity.
- MTOE - Modification Tables of Organization and Equipment. A modified TOE to meet specific operational requirements.
- OPMS - Officer Personnel Management System. The current system for the professional development and utilization of commissioned officers in all branches except Medical Department, Judge Advocate Generals' Corps and The Chaplain Corps. Key elements include:
- Dual specialty development of officers.
 - Revised promotion procedures to emphasize the Army's need for officers of varying background and career patterns.
 - Centralized selection of brigade and battalion level commanders.
- PBG - Program Budget Guidance. Document prepared for each MACOM and separate activity that provides resource guidance for the upcoming budget cycle to include tentative funding and manpower levels.
- PERDDIMS - Personnel Deployment & Distribution Management System. This proposed system will eliminate the current system of requisitioning for military personnel. Personnel requirements will be determined for all units by grade/skill based on the difference between authorizations and assets.
- PERSACS - Personnel SACS. A subsystem of the SACS which contains current and projected authorizations by grade/MOS.
- PPM - Personnel Priority Model. Used in CAP III to assist distribution of MOS shortages in accordance with unit's relative order of priority.
- PIA II - Personnel Inventory Analysis Model. An automated data processing model which computes MOS-training requirements.
- PRA - Projected Requisitioning Authority. Requisitioning authority for officers based upon DA established priorities, requirements and assets.
- REQUEST - Automated Recruit Quota System. A national telecommunications network capable of providing users simultaneous access to a common data bank containing the annual Active Army and Reserve components training programs.

ACRONYMS

- SACS - Structure and Composition System. An automated system which aggregates the qualitative and quantitative details of a structured force.
- SGA - Standards of Grade Authorizations. Provisions for determining the grades that can be authorized for positions classified in an MOS.
- SIDPERS - Standard Installation/Division Personnel System. A worldwide multicommand standard military personnel accounting, reporting, and management system.
- SQI - Special Qualification Identifiers. The SQI is identified as a letter and is used with any MOS to identify special requirements of certain positions and special qualifications of personnel who are capable of filling such positions. Examples are P-Parachutist, M-First Sergeant.
- SSI - Specialty Skill Identifier. Three characters (two digits and one letter) which are used to identify the specialty skill requirements of a position and specialty skill qualifications of officers.
- TAADS - The Army Authorization Documents System. TAADS is an automated system for developing and documenting organizational structures, requirements, and authorizations of personnel by grade/MOS/unit and equipment necessary to support the assigned missions of Army units. Final product is the unit's authorization documents (MTOE/TDA).
- TDP - Trainee Discharge Program. A personnel management program to enable commanders to eliminate nonperformers in training status with up to 6 months service.
- TDA - Tables of Distribution and Allowances. An organization established to perform a specific mission. General requirements: part of the fixed support establishment, subject to fluctuation, includes civilian personnel and there is no existing TOE which can be adapted to the required organization.
- TOE - Tables of Organization and Equipment. DA approved tables of organization and equipment for each type of unit.

KEY TERMS

- Career Management Field. A manageable grouping of related MOS's that provides visible and logical progression to grade E9.
- Career Soldier. A soldier who has 3 or more years of active Federal service.

KEY TERMS

End Strength. The total number of people (officer, warrant officer, enlisted) who may be on the active Army rolls as of the end of the fiscal year.

First Term. A soldier who has less than 3 years of active Federal service.

Force Development Management Information System. Comprises subsystems containing force and authorization data which can be selectively manipulated and displayed to facilitate management decisions.

Man-year. A man-year represents one individual in the Army for a full 12 months.

Objective Enlisted Force. A steady-state, synthetic, distribution of soldiers by grade and years-of-service that contains suitable, feasible, and desirable numerical objectives which:

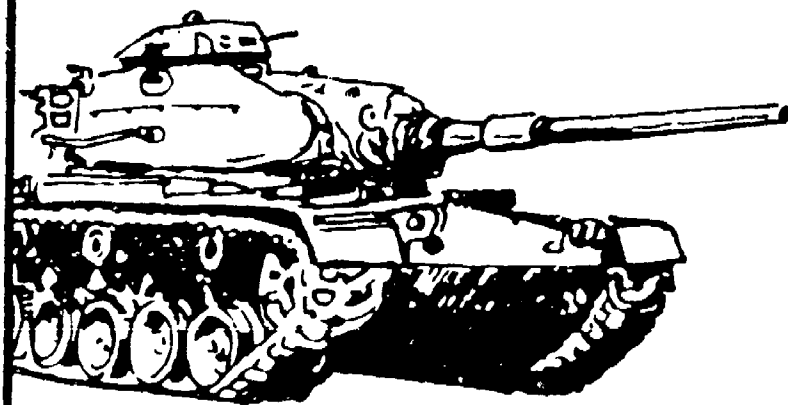
- provide direction for orientation of personnel management policies and procedures.
- provide standards against which to measure progress.

Total Army Analysis. A series of models to develop the program force and is constrained by manpower/dollars.

Year Group Management. A technique for the "Controlled Flow" of personnel through time by policy applications in order to achieve established personnel objectives.

Chapter III

Tank Forces Management Group



LOGISTICS

CONTENTS

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In-depth analyses along with further documentation and bibliography are available and are contained in the Logistics Subsystem Appendix, in IMA, office, Pentagon, Room 1A871.

LOGISTICS SYSTEM DESCRIPTION

The tank is a complex, sophisticated weapon which relies on the proper interaction of functional equipment, trained personnel and responsive support. The tank force is highly dependent on timely logistics support for sustained operations. Deployed tanks must be maintained in a continuous high state of readiness. They must be capable of unrestricted movement over a wide variety of terrain and climatic conditions.

Emphasis to provide the best possible tank to equip our armor forces has led to numerous product improvements in the current fleet. These improvements are designed to increase the combat capability, reliability, availability, and maintainability of this weapon system. The XM-1 main battle tank incorporates new technology to produce a highly lethal, survivable, and complex tank which will augment and/or eventually replace the current fleet. The best possible logistics system must be in operation to sustain this critical vehicle.

The Army logistical system is functional in nature and oriented toward commodity management. There is neither a tank logistics support system nor a management structure above battalion level which ties together the logistics, personnel and training needs of the tank force. Therefore, to determine ways to render the logistics system more responsive to the tank force it was necessary to review the overall existing support system structure, doctrine and procedures.

ACQUISITION
AND
LOGISTICS ...

CLOSELY
RELATED

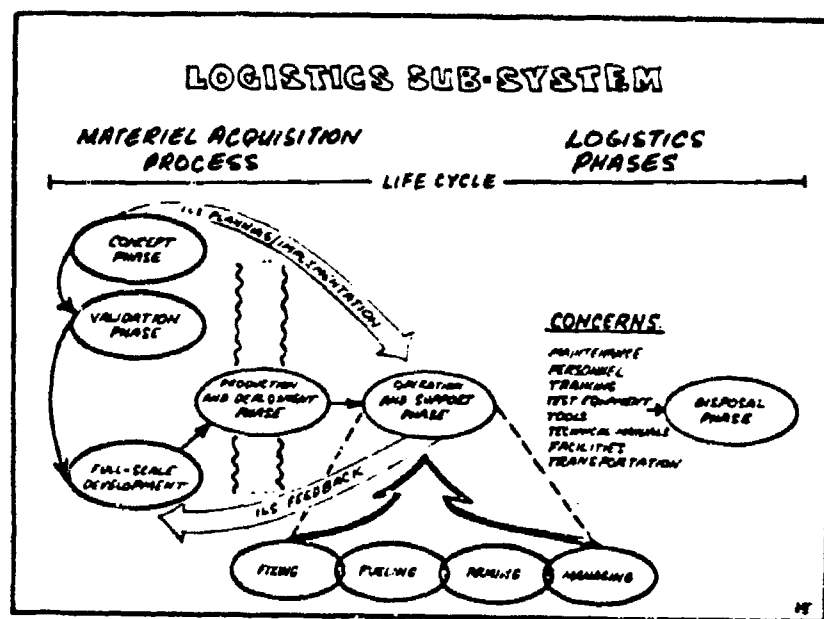


Figure L-1

CONTINUOUS PLANNING
AND
FEEDBACK REQUIRED

The logistics system is primarily concerned with that part of the life cycle management model (fig. L-1) which starts with the deployment phase after production and continues until eventual disposal.

Integrated Logistics Support (ILS) planning/implementation/feedback should provide a tight management link between the materiel acquisition and logistics phases. Logistics evaluation places maximum emphasis on the operation and support phase with special concern directed toward the key elements of ILS: maintenance, personnel, training, test equipment, tools, technical manuals, facilities and transportation.

In General
THE LOGISTIC'S SYSTEM IS...

RESOURCE CONSTRAINED..

PEACETIME EFFICIENCY VERSUS WARTIME
EFFECTIVENESS

FUNCTIONALLY/COMMODITY ORIENTED...

MAINTENANCE... SUPPLY... TRANSPORTATION UNITS...
POL AND AMMUNITION UNITS — NOT
WEAPONS SYSTEMS ORIENTED

ADP DEPENDENT...

ALPHA SPEEDER... DAAS... SAILS... DLOGS —
EXACTING PROCEDURES — VULNERABLE EQUIP

COMPLEX...

MANY VARIED ACTIVITIES... INTERDEPENDENCY
OF EFFORT ESSENTIAL... CENTRAL DIRECTION
DIFFICULT... TECHNICAL CHANNEL DIFFUSE

Figure L-2

The current logistics system (fig. L-2) is resource constrained in that it must balance peacetime efficiency against the capability for wartime effectiveness. It is functionally and commodity oriented without significant weapon system orientation. Logistics is heavily dependent on automatic data processing (ADP) and thus requires exacting procedures and highly sensitive equipment to accomplish its functions. The system is complex with varied activities requiring interdependency of effort. The technical channel becomes diffuse in echelons above division. Central direction is difficult to achieve.

The Army logistical system has proven adaptable to the varied demands of worldwide operations, but at a high cost. Criticism of mission accomplishment is always possible because of the magnitude of the force sustainment task. Managers of the logistics system have constantly attempted to best use the allocation of available resources and to exploit state-of-the-art technological gains. Application of ADP techniques have permitted more precise management and more rapid processing of supply requirements. ADP has also permitted manpower savings and reduced inventories, but it has also surfaced questions as to its combat sustainability.

The establishment of three theater-oriented CONUS distribution depots has significantly reduced processing time for supply of DARCOM and DLA parts. An air line of communication was placed in operation on 1 January 1977 to airlift repair parts to USAREUR reducing the average order and ship time significantly. The DARCOM 'Red Team Assessment' of tanks has been a valuable tool in evaluating the hardware and support system.

The actions noted above suggest that when logistics management is focused on shortcomings, viable solutions are possible. The logistics system operates best when attention can be focused on key areas. It follows that focusing logistics attention on the tank will maximize support for this weapon system.

Doctrinal Requirements

Doctrine states the only meaningful measure of combat service support effectiveness is the percentage of battlefield operable weapons systems at any given time. Logistics must be organized to focus on those few primary weapon systems which are critical to success on the battlefield. Supplies, support and weapons must be concentrated at critical places and times.

Influences on Logistics

Before focusing an analysis on ways to make the logistics system more responsive to the tank weapon system, it was necessary to look at the influences on logistics. Major influences include funding constraints, introduction of new equipment, and numerous ongoing doctrinal and technical studies/projects which will change the system and its environment.

INFLUENCES	
ON	
LOGISTICS	

One important influence is that of constrained funding which causes decisions to be made to limit resources placed into the system. The need for peacetime efficiency drives logistical organization, policies and procedures. It also presents the commander and logistician with the serious and continuous challenge of balancing this efficiency with the need for maintaining a capability for wartime effectiveness. A clear example of this dilemma is the readiness goal which seeks a unit wartime effectiveness potential of at least 90 percent equipment operability from a peacetime constrained logistics system that supplies resources at something less than 90 percent. Equipment operational readiness rates become more difficult to sustain as the ratio of equipment to personnel increases.

FUNDING	
CONSTRAINTS	

NEW
EQUIPMENT

Between 1978 and 1985 the Army will field the greatest quantity of new equipment since World War II and perhaps may even surpass that. Introduction of the MICV, ITV, XM1, ASH, UTAS, AAH, PATRIOT, etc., will cause increased logistical workloads and must include new techniques, procedures, and doctrine. The US Army has become a capital intensive organization. There is now seven-tenths of a major system for every soldier in the deployable force. The influx of a multitude of expensive, complex weapons systems in the near future will increase the equipment dependency.

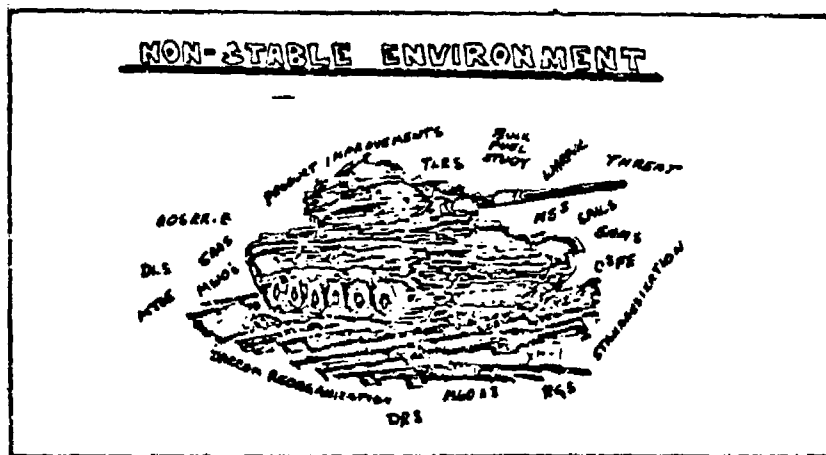


Figure L-3

STUDIES
AND
PROJECTS

Numerous ongoing studies and projects describe a non-stable training environment (fig.L-3). Decisions based on these studies will have a profound impact on the logistical organization and its procedures. These must be meshed with the current system already operating in a highly dynamic environment. Some of the more important projects are the Division Restructuring Study, Restructured General Support, Direct Logistics Support, Reliability Centered Maintenance, Wartime Repair Parts Consumption planning guides and the Munitions Support System Structure.

The Systems Approach

Development of the full potential of critical weapon systems suggest that the functional orientation of the logistical system be subordinated to weapons systems management. The Army's logistical system does not exist independently. It is inextricably dependent upon budgetary guidance from Congress and OSD, planning guidance of the Army staff and major commands and daily decisions of operators and mechanics. It is also highly dependent

on interrelationships with the personnel, training and development systems. This interrelationship provides a stabilizing, positive influence but can also cause a degradation in the effectiveness of the logistical system when not in proper harmony. For example, when adequate numbers of properly trained personnel are provided and when equipment is acquired which is designed for reliability and ease of maintenance, then logistics is well on the way toward successful mission accomplishment. Conversely when this support is not forthcoming from the personnel, training and development systems, the effectiveness of the logistical system is considerably reduced. Each area of logistics which is examined must be evaluated not only in terms of adjustments required of that system, but also of those required of the other interrelated operating systems. This systems approach is necessary to adequately understand logistics and its role in providing support for the tank forces.

The ability of the present logistical system to focus on the tank to maximize its combat potential is severely limited. Four principal areas of operation - FIXING (to include Class IX supply), ARMING, FUELING and MANAGING - were examined to determine the means of achieving a more intense focus.

FIXING

The FIXING or supply and maintenance system involves both wholesale and

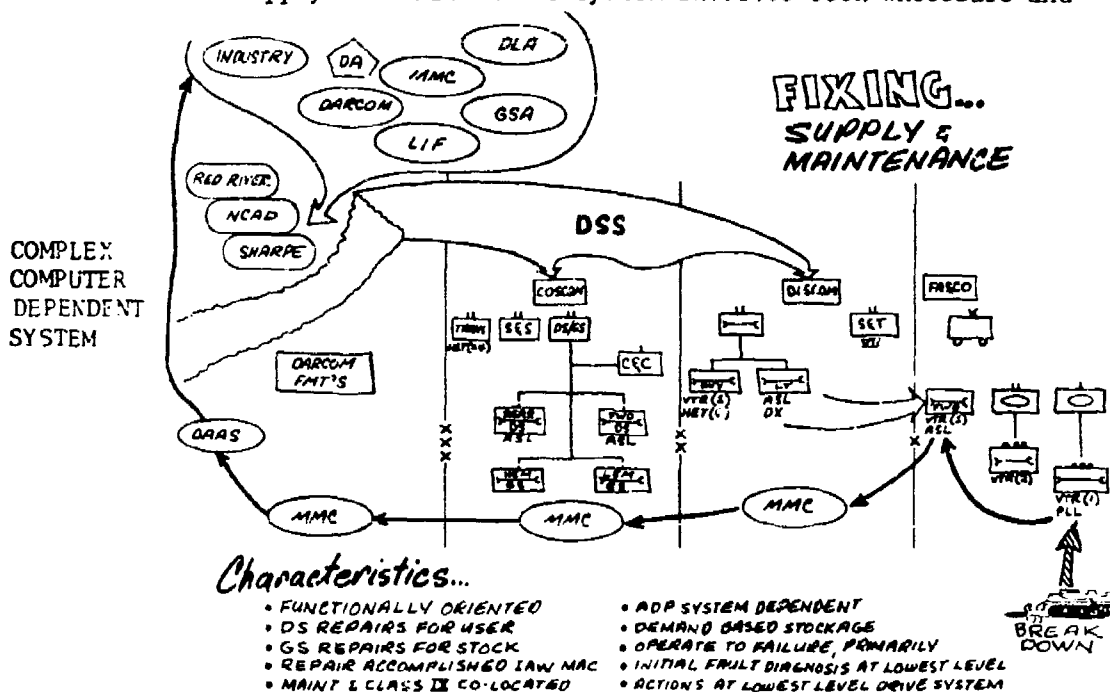


Figure L-4

retail logistics doctrine and procedures. The maintenance support structure and the emerging materiel management centers are highlighted in fig. 4.

It includes the Direct Support System (DSS) which provides repair

COMMANDER'S
READINESS
GOAL IS
100%

parts supply support from the theater-oriented depot direct to division and corps areas. The division maintenance battalion provides "one-stop" tank maintenance service. The lower command echelons, battalion, brigade, division know the readiness status of their tank force. At echelons above division,

tank maintenance responsibility becomes diffuse. The most important catalyst for the FIXING system is the commander's perceived readiness goal which is one hundred percent operational ready every day.

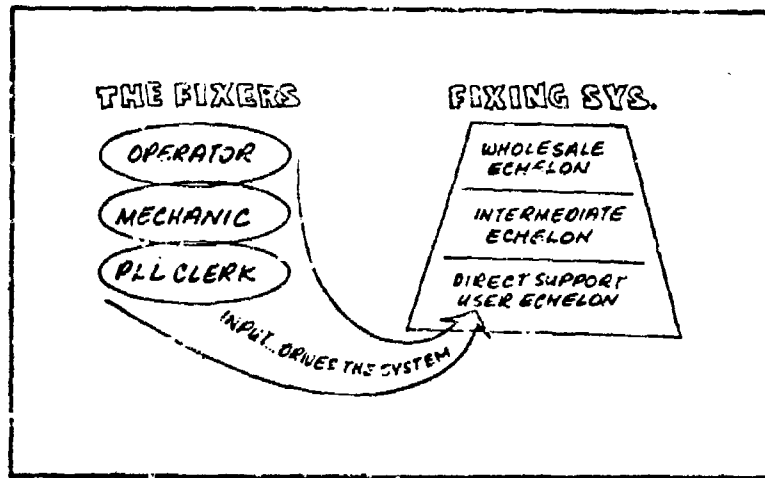


Figure I-5

The actions of individuals at the lowest level - the operator, the organizational mechanic and the PLL clerk drive the FIXING function (fig I-5).

Supporting organizations respond based on the stimulus to the system initiated by these individuals who are the lowest rank and have the least training and awareness of the system.

LOWEST LEVEL
INPUT DRIVES
THE ENTIRE
SYSTEM ...

The operator must ensure proper operation, perform basic preventive maintenance services and properly detect equipment failures. The improper completion of these tasks can cause serious disruption in the FIXING system and can lead to operational mission failure.

To support the operator, the organizational mechanic must conduct fault diagnosis when equipment failure occurs. If the mechanic's diagnosis is incorrect or the repairs are poorly accomplished, the repair system is stimulated unnecessarily and its actions are improperly oriented.

The FILL clerk's actions are the basis for the Army system of demand-based repair parts stockage. Improperly completed, these tasks not only cause erroneous stockage throughout the system, but may prevent a critical weapon system from being maintained in an operational ready status for want of an essential repair part.

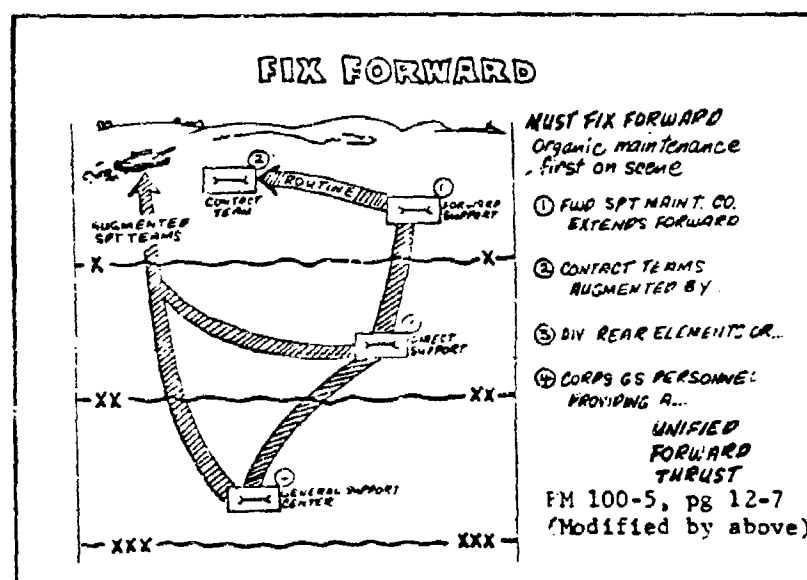


Figure L-6

**DOCTRINE
REQUIRES
FIXING
FORWARD**

The FIXING system must be oriented in a FIX FORWARD pattern (fig. L-6). Support functions critical to battle must be conducted as far forward as possible. Support must be provided quickly; highly skilled technicians must be transported to points where their expertise is needed.

Limitations in the FIXING system which impact unfavorably on the attainment of the maximum combat potential of the tank force are presented in subsequent paragraphs along with recommendations for system improvement.

FIXING Findings

1. FINDING: TANK DIAGNOSTIC AND MAINTENANCE TASKS TOO OFTEN EXCEED THE ABILITIES OF THE SOLDIER WHO RECEIVES FUNCTIONALLY ORIENTED, MULTI-SYSTEM TRAINING.

DISCUSSION: The diagnostic and maintenance tasks for tank equipment often require skills beyond the general training entry level soldiers receive on a wide variety of equipment. The armor battalion is now authorized about thirty different vehicles which the track vehicle mechanic is expected to maintain. Armored cavalry squadrons contain even more equipment. The maintenance experience base has been eroded due to years of career progression/development primarily by on-the-job experience/on-the-job training (OJE/OJT) and present low retention rates of qualified mechanics. The first term soldier finds he must attempt to maintain this wide assortment of vehicles with poor entry level training followed by little or no backup expertise in the unit.

The large quantity of highly sophisticated equipment which will be introduced into the Army inventory during the next few years will further exacerbate this situation. For example, the M60A3 tank which is roughly the 10th generation of the basic post WWII tank, is now being considered for fourteen product improvements which incorporate technology gained from the XM1 program. This rapid addition of new technology requires significant additional technical expertise to insure operational and maintenance proficiency.

RECOMMENDATION: *Provide maintenance and supply personnel with system specific training at the initial entry level with corresponding professional development training.*

(Interrelates with similar Training recommendation.)

2. FINDING: INADEQUATE TOE PROVISIONS FOR SKILLED SUPPORT PERSONNEL AT COMPANY/BATTALION LEVEL, COMPOUNDED BY CURRENT LOW MANNING LEVELS, PRECLUDES SATISFACTORY OPERATION OF MAINTENANCE AND SUPPLY RESPONSIBILITIES.

DISCUSSION: The current TOE provisions for skilled maintenance personnel at company and battalion level militates against successful accomplishment of the maintenance mission. The manpower authorization criteria established in AR 570-2 are outdated and do not accurately reflect requirements of an anticipated intense combat effort.

REQUIRED
SKILLED
PERSONNEL
NOT
AVAILABLE

To maintain an acceptable operational readiness posture armor unit commanders need 100 percent assignment of low density support MOS's. Yet, the percentage of turret mechanics assigned in USAREUR divisions is slightly above 50 percent. Track vehicle mechanics are somewhat better with about 70 percent assigned. Skill level one graduates of TRADOC mechanic and supply courses are basically apprentices who must receive additional training in their first unit assignment in order to reach acceptable mechanic proficiency. The absence of skilled supervisors further compounds the problem as entry level mechanics are subject to several repetitions of ineffective OJE.

Mechanic frustration with the maintenance career management fields is clearly indicated by current low first term reenlistment rates (track vehicle mechanic, 63C - 17%; M60A1 turret mechanics, 45N - 13%; Sheridan turret mechanic, 45P - 11%; M60A2 turret mechanic, 45R - 8%).

RECOMMENDATION: Increase availability of skilled support personnel at armor company/battalion level by:

Validating Manpower Authorization Criteria (MACRIT) factors to provide a more accurate base for maintenance manpower authorization.

Improving percentage of fill of low density support MOS's in armor units.

Improving technical competency of support personnel through system specific training.

(Interrelates with similar Personnel and Training recommendations.)

3. FINDING: TECHNICAL DOCUMENTATION FOR TANK SYSTEMS IS COMPLEX, OFTEN INCOMPLETE AND NOT READILY COMPREHENSIBLE TO SUPPLY AND MAINTENANCE PERSONNEL.

DISCUSSION: Current technical documentation does not adequately support maintenance of the tank force. Each year the Army becomes more equipment intensive and dependent upon more sophisticated materiel. Product improvement programs continuously incorporate state-of-the-art changes to improve performance. Technical instructions have, of necessity, become more complicated for both operator and support personnel. While it may be possible to improve the individual's ability to read such complex technical documentation in the long term, a more direct approach is to simplify and improve the readability of the text through a front end analysis of tasks to be accomplished and step-by-step elaboration.

Diagnostic operations normally require immediate and constant reference to the manual. The shortcomings of today's TM's were clearly indicated by a Department of the Army survey that disclosed that 30 percent of a sample group of 118 track vehicle mechanics incorrectly diagnosed mechanical malfunctions. In a test conducted at Fort Carson, 35 percent of the generators, regulators, alternators, distributors and starters returned as unusable were actually serviceable. Similar evaluations were recorded during visits to other armor units in CONUS and in USAREUR. This situation reflects not only inadequate technical documentation, but also shortcomings in the training system. Better technical documentation will improve the performance of the mechanics and parts clerk.

Among promising initiatives which address technical documentation is the Integrated Technical Documentation and Training (ITDT) project. A comparison of conventional documentation with ITDT is shown in fig. L-7.

TECHNICAL DOCUMENTATION	
CONVENTIONAL	ITDI
<ul style="list-style-type: none"> ● INCLUDES ONLY TECHNICAL DOCUMENTS. <ul style="list-style-type: none"> - TM - TB - LO - PMO ● IS VOLUMINOUS. <ul style="list-style-type: none"> - 9100 PAGES FOR M-60A1. ● IS EXPENSIVE. <ul style="list-style-type: none"> - \$3M FOR XM1. ● IS INCOMPREHENSIBLE TO TROOPS. <ul style="list-style-type: none"> - COMPLEX, INCOMPLETE, INACCURATE. - INCORRECT DIAGNOSIS. - EXCESSIVE REPAIR PARTS USAGE. - LENGTHY AIT REQUIREMENT. - LARGE MANPOWER NEED. 	<ul style="list-style-type: none"> ● INTEGRATES TRAINING WITH TECHNICAL DOCUMENTS. <ul style="list-style-type: none"> - JPM (JOB PERFORMANCE MANUAL) - JPG (JOB PERFORMANCE GUIDE) - EXTENSION TRAINING MATERIALS ● IS MORE VOLUMINOUS THEN CONVENTIONAL. <ul style="list-style-type: none"> - 15,000 PAGES FOR XM1 ● IS MORE EXPENSIVE THAN CONVENTIONAL. <ul style="list-style-type: none"> - \$5M FOR XM1. ● MUST BE VALIDATED USING TROOPS. <ul style="list-style-type: none"> - SIMPLE. - REDUCED ERROR RATE 75% - REDUCED PARTS DEMAND 30%. - REDUCED TRAINING TIME 25%. - REDUCED MANPOWER 35%.
<p>OVERALL MTTR REDUCTION OF 40%</p> <p>VS</p> <p>50% INCREASE IN INITIAL COST</p>	

Figure L-7

It is recognized that ITDT is expensive and will increase the volume of instructional material significantly; however, the long term benefits derived from improved documentation will more than offset initial developmental and publishing costs.

TRADOC has requested ITDT be developed for all current and future equipment development programs. Existing contracts address tank turrets and diesel trucks. Application of improved technical documentation to all vehicles of the armor force will maximize maintenance performance.

RECOMMENDATION: *Provide improved technical documentation for tanks and supporting vehicles and equipment of the tank battalions and cavalry squadrons.*

(Interrelates with similar Training recommendations.)

4. FINDING: THE CURRENT SYSTEM OF PROVIDING REPAIR PARTS IS
MARGINALLY ADEQUATE IN PEACETIME. IT IS
DOUBTFUL THAT IT CAN PROVIDE RESPONSIVE SUPPORT
TO WARTIME ARMOR OPERATIONS.

DISCUSSION: The objective of maintenance operations must be to attain the highest state of equipment readiness prior to outbreak of war and to insure the sustainability of the force during the first days of the war. There are several major limitations in providing responsive repair part support for wartime operations.

Class IX (repair parts) processing is heavily dependent on continuous ADPE operation. A recent Management Information System (MIS) seminar concluded that the logistical MIS will provide only marginal support for a "come as you are" war. The DMMC, responsible for Class IX management in the division, is inadequately staffed for wartime operations. The Standard Army Intermediate Logistics Systems (SAILS), while acceptable for peacetime, is incapable of supporting the larger wartime corps on an active battlefield.

Reliance is now placed on the Direct Support System (DSS) with minimal overseas stockage. This has placed a greater premium on availability of necessary stocks in the division and a greater dependence on theater reserve TR 1 and TR 3 stocks (Theater 1 - overseas positioned, and Theater 3- CONUS positioned) for follow-on consumption in the event the line of communications is interrupted.

The mobility of divisional ASL and PIL stockage is currently inadequate. Purposefully designed and dedicated repair part carriers must be authorized to divisional units to insure logical storage and rapid movement of combat stocks.

Current PLL/ASL stockage does not accurately reflect true combat needs because it is based on peacetime usage constrained by funding considerations. Existing

procedures permit retention of mission essential parts, but there is no universal application or commonality of parts stocked for this purpose. The adequacy of this stockage is further degraded by marginally effective PLL clerks. The end result is that the positioning of repair parts, to include DX components and major assemblies, does not appear commensurate with the doctrinal concept of forward tank maintenance. A semi-standard stockage based on Wartime Repair Part Consumption (WARPAC) and/or Combat Damage Assessment Model (CODAM) planning guides appears to have great applicability in assuring availability of repair parts to perform wartime mission essential operations.

Responsive repair part supply must be initiated with each customer requisition. Present user confidence is low. Too many requisitions are rejected, are placed in management suspense, or end up as a "no record" transaction.

RECOMMENDATION: *Review current repair parts (PLL/ASL) concept as it applies to the tank force and develop ways to simplify and improve readiness for war.*

Explore new procedures in an open-ended review which considers:

Wartime sustainability of MTS operations.

Validation of Wartime Repair Parts Consumption Planning Guide (WARPAC) and Combat Damage Assessment Model (CODAM) for all tanks, and use of these guides to develop semi-standard PLL/ASL and war reserve, TR1 and TR3 stockage.

Desirability of shipment and/or prepositioning of "push" packages of tank essential repair parts for emergency purposes.

Methods used to transport PLL/ASL in the theater and determine alternatives to include design of dedicated PLL/ASL vehicles to provide mobility and facilitate rapid location/identification of repair parts.

(Interrelates with similar Personnel and Training recommendations.)

5. FINDING: UNCERTAINTY EXISTS AS TO THE MOST EFFICIENT ORGANIZATION FOR THE CONDUCT OF MAINTENANCE IN THE ARMOR BATTALION.

DISCUSSION: Many variables such as facilities, personnel and skills availability, physical location of units and relative imminence of war all impact on development of a "standard" maintenance organization.

Current maintenance structure within armor battalions makes the company commander responsible for the maintenance posture of assigned vehicles and equipment and for the accompanying administrative supply/paperwork. The battalion commander has a backup capability through use of battalion maintenance platoon personnel.

Some units have reorganized their maintenance activities into a single maintenance administration center (MAC) with company maintenance personnel placed under the operational control of the battalion maintenance officer (BMO). The BMO is responsible for the supervision of maintenance related administrative tasks and the maintenance operations. Company maintenance personnel remain on company TOE's and company commanders retain responsibility for the unit maintenance posture. The MAC organization is designed to reduce the maintenance administrative burden of the company commander and provide the battalion commander more management flexibility in use of his maintenance workforce.

The Division Restructuring Study (DRS) maintenance concept continues the trend of removing maintenance responsibility from the company commander. The primary objective of this maintenance thrust is to free the company commander of all responsibilities except for those concerned with the tactical employment of his weapon systems. DRS removes all maintenance personnel from line companies and creates a separate maintenance company for the battalion. The line company commander maintenance responsibility is limited to operator/crew activities. The maintenance company commander becomes responsible for the maintenance posture of the battalion. Additionally, he is authorized to perform limited DS maintenance, thereby shifting the repair emphasis forward.

RECOMMENDATION: *Test organizational maintenance concept that calls for a maintenance company which is organic to battalion with no maintenance resources organic to the line company.*

(Interrelates with similar Personnel and Training recommendations.)

6. FINDING: DIRECT SUPPORT MAINTENANCE ORGANIZATIONS DO NOT FACILITATE THE FORWARD REPAIR MISSION.

DISCUSSION: To implement forward repair concepts at the direct support (DS) level requires significant doctrinal, organizational, equipment and supply policy changes.

Greater flexibility and autonomy in the operations of the maintenance support teams are needed. This requirement calls for an increased communications capability for more responsive control and movement of the teams from work site to work site on the battlefield. The two radios currently authorized in each forward support maintenance company cannot provide this control. The communications capability of the heavy maintenance company is similarly deficient. The doctrinal solution to this challenge, which requires the maintenance unit to use tactical radios of the combat unit, is not feasible when that unit is engaged in active combat operations.

Support teams require a high mobility vehicle offering some protection on the battlefield. The currently authorized 5-ton shop van is inadequate for the operation of maintenance teams in forward areas; it lacks both the mobility and armor protection required.

Forward maintenance and recovery must rely heavily on field expedient repair and cannibalization operations. These subjects are not clearly defined in doctrine nor are they taught in sufficient detail to maintenance personnel.

The DSU personnel operating in maintenance support teams must be able to make rapid, accurate diagnosis to determine what repairs are essential, where they can be effected, and the time required to accomplish them. These individuals must be trained and organized to approach the weapon system as a single system. This requires a weapon system orientation and the availability of "master mechanic" personnel who are, in fact, experienced in all aspects of tank maintenance.

Support of combat operations is highly time dependent, i.e., repairs must be completed rapidly to return tanks to battle and/or prevent the loss of the vehicle. Cannibalization will be used where appropriate; however, changing of DX components and major assemblies must be extensively utilized with repair of the components or assemblies being accomplished off the battlefield to the rear. Currently, stocks are inadequate to maintain this type of combat support operation.

RECOMMENDATION: Reorganize direct support units to:

Achieve optimum communication capability.

Provide suitable vehicles for forward repair maintenance support team operations.

Facilitate forward recovery, cannibalization and repair operations.

Permit weapon system organization within the DSU.

Provide for adequate major assembly and DX components to support forward repair concepts.

(Interrelates with similar Personnel and Training recommendations.)

7. FINDING: SUPPORT ORGANIZATIONS IN ECHELONS ABOVE DIVISION
DO NOT HAVE A WEAPONS SYSTEM ORIENTATION AND
LACK THE ABILITY TO FOCUS SUPPORT ON THE TANK FORCE.

DISCUSSION: The current general support (GS) capability lacks the ability to focus priority support on the tank force. Corps Class IX support is not integrated with maintenance, and stockage is limited to NORS demands and mission essential items. The diffuse orientation of the GS role in USAREUR has grown with the reduction of the tooth-to-tail ratio.

GS UNITS
ARE NOT
WEAPONS
SYSTEM
ORIENTED

The Restructured General Support (RGS) concept currently being evaluated at Fort Hood should provide answers as to the most effective physical organization for weapon system support. The COSCOM Armor Support Battalion will provide a "one-stop" tank servicing capability at Corps level through the integration of maintenance skills, repair parts, major items and recovery assets. The unit will be trained and equipped to focus efforts during combat on a forward fix capability.

RESERVE
COMPONENTS
PROVIDE 65%
OF USAREUR
WARTIME GS

Over 65 percent of the wartime logistical support in echelons above division will be provided by Reserve Component (RC) forces. Through affiliation of these RC units with overseas organizations and by transporting them to Europe for two week annual training, improved deployability and significant operational readiness benefits can be realized. For example, heavy equipment maintenance companies could perform mission support maintenance in existing overseas facilities to repair unserviceable tank assets destined for theater war reserve stockage. Personnel would gain meaningful training and an awareness of contingency areas of operation. A significant number of support units would be in Europe to immediately assume a mission in the event of hostilities. Other benefits may be anticipated in the areas of enhanced morale, retention rates and initial enlistment incentives.

Figure L-8 is notional in concept. The number and type units identified in the chart could be training in Europe during the month indicated. Thus, should war start in any given month, reserve units would be in theater and in an operational status.

RESERVE COMPONENT SUPPORT UNITS...USAREUR

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
OVERSEAS RESERVE TRAINING	FIXING												
	HV EQUIP MAINT COS. (38)			1	2	2	2	2	2	1	1		
	DS/GS MAINT COS. (81)	1	1	1	2	3	5	5	5	3	2		
	REPAIR PARTS & SPLY COS. (82)	1	1	2	3	3	4	4	4	3	2		
• PERMITS MISSION SUPPORT													
	HV MATERIEL SPLY COS. (12)					1	1	1	1				
	HV TRUCK COS. (9)						1	1	1				
• PROVIDES MEANINGFUL TRAINING	ARMING												
	CONVENTIONAL AMMO COS. (31)			1	1	1	2	2	2	2			
	LT & MED TRUCK COS. (97)	1	1	1	2	4	5	5	5	3	3		
• IMPROVES DEPLOYABILITY													
	FUELING												
	POL OP & SUPPLY COS. (16)			1	1	1	1	1	1	1			
	POL MED TRUCK COS. (19)			1	1	1	1	1	1	1			
• ENHANCES MORALE													

Figure L-8

USAREUR currently plans to accommodate annual training of 44 RC units and estimates a buildup to 250 RC units training in Europe by 1983. The merits of this program are such that expeditious action should be taken to accommodate European training of all 250 units in the 1979 time frame.

RECOMMENDATION: Reorient the general support structure to form an organization capable of "one-stop" weapon system support, with the mission and capability to focus on forward area repair.

Develop plans for affiliation of Reserve Component support units with overseas general support forces to include providing for annual training of these units in USAREUR.

(Interrelates with similar Training recommendation.)

8. FINDING: CURRENT RECOVERY DOCTRINE IS EITHER NONEXISTENT OR FRAGMENTATED: RECOVERY EQUIPMENT AUTHORIZATIONS ARE OF QUESTIONABLE ADEQUACY TO SUPPORT ARMOR COMBAT OPERATIONS.

BY NATURE,
RECOVERY
OPERATIONS ARE
DECENTRALIZED.
DOCTRINE MUST
ADDRESS THE
NEED FOR
CENTRALIZED
CONTROL

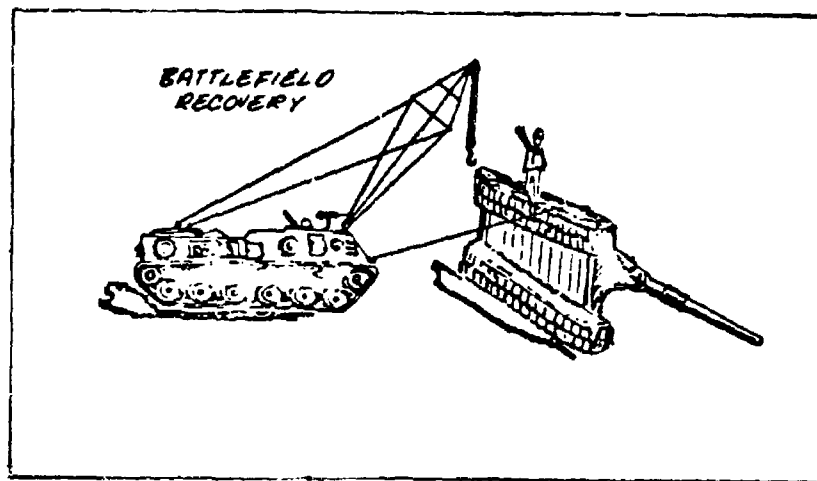


Figure L-9

DISCUSSION: Development of recovery doctrine has not kept pace with the changing concepts of forward maintenance repair. Battlefield recovery doctrine is either outdated or virtually nonexistent. There is no guidance for priority support to a covering force operation. Recovery operations must rely on a unique blend of centralized control and decentralized use of recovery and evacuation resources (fig L-9).

The "fix forward" concept infers a greater need for recovery and evacuation vehicles if timely recovery and repair is to be completed. The number of heavy tank recovery vehicles (M-88 VTR) and heavy equipment transporters (HET) at division and corps appear inadequate. Additional review is necessary to develop recovery doctrine in support of covering force operations, and to determine the optimum authorization of VTR's and HET's within divisional units and in echelons above division to facilitate forward repair/recovery operations.

RECOMMENDATION: Conduct a system review of recovery doctrine and procedures to:

Update recovery doctrine, and

Identify the optimum combat effective mix of Heavy Equipment Transporters (HET) and Vehicle, Track Recovery (VTR) to be employed at battalion, division and corps levels.

9. FINDING: THE CURRENT SYSTEM FOR LOGISTICAL SUPPORT OF THE ARMORED CAVALRY REGIMENT (ACR) LACKS DEDICATION AND RESPONSIVENESS, HAS LIMITED CAPABILITY TO PROVIDE ESSENTIAL SUPPORT, AND LIMITS EMPLOYMENT FLEXIBILITY.

ACR NEEDS
DEDICATED LOGISTICS SUPPORT
THE ACR

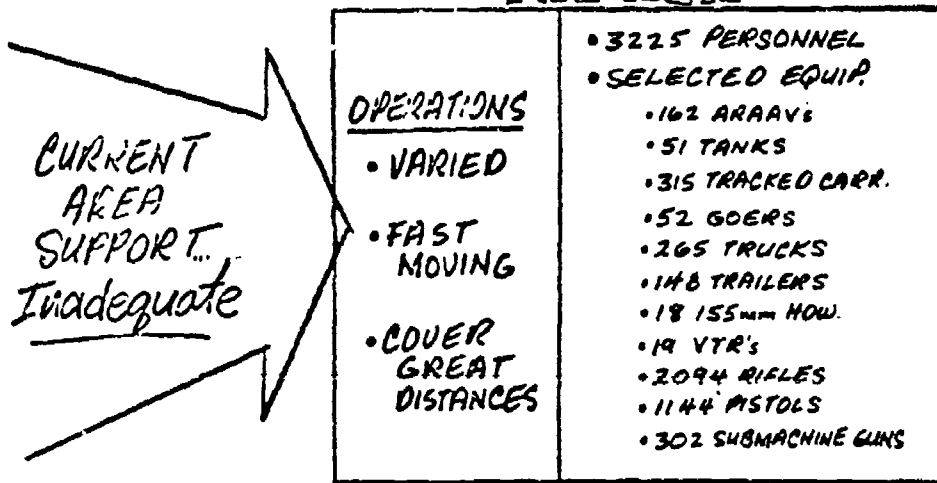


Figure L-10

DISCUSSION: Currently the armored cavalry regiment obtains DS support from COSCOM units which also provide support to other corps area units. This arrangement lacks responsiveness, offers limited capability to provide dedicated support, and reduces flexibility of the regiment's employment (fig L-10). The USALOGCEN is currently evaluating a support squadron which is designed to resolve this shortcoming. This squadron will provide organic DS materiel management, supply, maintenance and transportation capability for the regiment.

RECOMMENDATION: Expedite activation of an organic support squadron to provide dedicated logistical support to the ACR.

10. FINDING: THE CURRENT TECHNICAL ASSISTANCE CHANNEL IS NOT WEAPONS SYSTEM ORIENTED, LACKS UNIFORMITY OF ORGANIZATION, AND IS LIMITED IN COHESIVENESS OF EFFORT IN SUPPORT OF THE TANK FORCE.

DISCUSSION: DARCOM's ongoing internal reorientation to weapon system management is an essential element in improving support to the tank forces. The current technical assistance channel, key to projecting the readiness command to the field, continues to require improvement. It currently lacks weapon system orientation, uniformity of organization and consistency of operation.

TECHNICAL CHANNELS
ARE NOT WEAPON
SYSTEM ORIENTED

The Direct Logistics Support (DLS) concept, being evaluated at Fort Hood concurrently with the Restructured General Support (RGS) concept, addresses needed logistic improvements. There is concern that DLS will rely on a commodity orientation only and not result in a more positive weapon system orientation for critical systems like the tank. Implementation of this concept must include establishment at each DARCOM Logistics Assistance Agency (DLAA) of a "tank cell," which has the responsibility of looking at the entire tank weapon system.

RECOMMENDATION: *Establish a responsive, positive technical channel to provide guidance and to receive feedback on tank support matters.*

Activate in selected DARCOM Logistics Assistance Agency (DLAA) a "tank cell" which has the responsibility of looking at the entire tank system.

(Interrelates with similar Personnel recommendation.)

ARMING

ARMING the tank force requires from 120 to 800 STONS of main gun ammunition per armor division per day. The future battlefield promises even higher ammunition resupply rates. A large transportation requirement exists to move this bulk cargo from entry ports to the ultimate user. Efficiency and expediency dictate this cargo be handled as infrequently as possible and it arrive at the user in as close to a "ready to fire" condition as possible. Characteristics of the ARMING system are shown in Figure L-11.

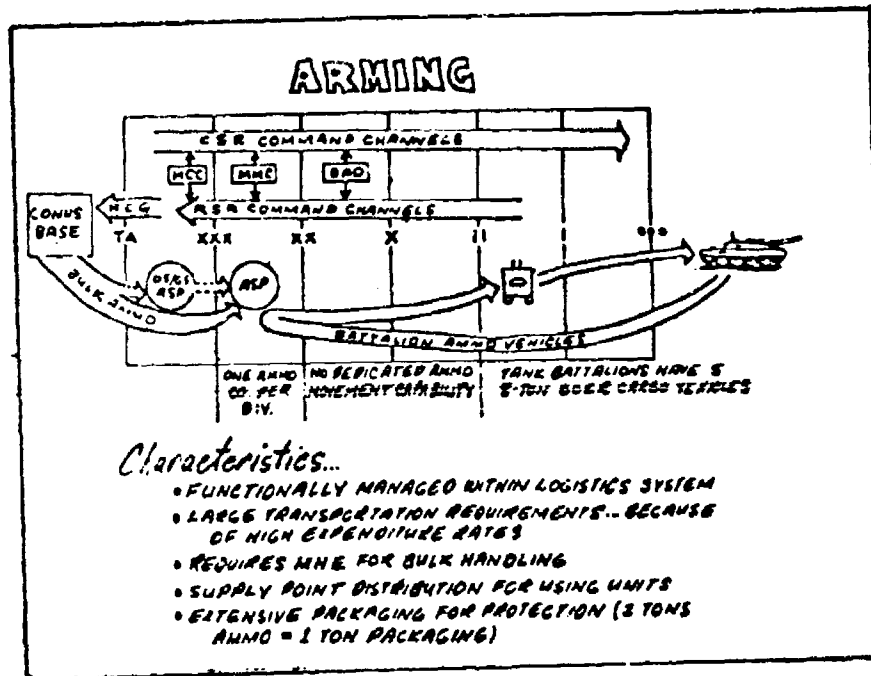


Figure L-11

There is a need for substantial quantities of material handling equipment (MHE) at many points in the supply system. Current doctrine requires

supply point distribution for combat units.

AMMUNITION
SUPPLY IS
NOT USER
ORIENTED

Tank battalion ammunition supply vehicles
must travel 50-70km round trip to a corps ASP.

Packaging of ammunition has traditionally been extensive with as much as fifty percent of the weight attributed to packaging materials. This method of packaging has been necessary to provide protection for a product which is normally not provided covered storage and which normally requires storage for extended periods.

Ammunition packaging is a sub-element of the funding program for development of new items of ammunition. Since 1973 the only funded exploratory development for ammunition packaging has been for fire retardant packaging materials. In the past five years there have been no RDTF funds (6.2) expended for user-oriented (reduction of weight and time required to unpack/reload) ammunition packaging.

Accomplishment of rearming operations is normally performed "off-line," even in combat situations. This is necessary because it requires dismounting and exposure to hostile fire of both tank and ammunition supply personnel for periods of twenty minutes to two hours.

Ammunition supply is a functional, commodity-oriented system essential to combat operations. Providing ammunition "when and where" needed by the fighting force requires extensive movement and management coordination and specific command control. Although the present ammunition supply system is basically sound, there are several areas that require improvement if the Army is to realize the full combat potential of armor forces. These areas include development of a tank rearming system; changes to ammunition unit structures; and other improvements relating to storage, transportation, maintenance, and procurement of ammunition items. Findings and accompanying recommendations are discussed in succeeding paragraphs.

ARMING Findings

11. FINDING: AMMUNITION PACKAGING, UNIT AMMUNITION VEHICLES, MATERIAL HANDLING EQUIPMENT AND COMBAT VEHICLES HAVE BEEN DEVELOPED INDEPENDENTLY, RESULTING IN A MANPOWER INTENSIVE, TIME CONSUMING, REARMY OPERATION FOR ARMOR FORCES.

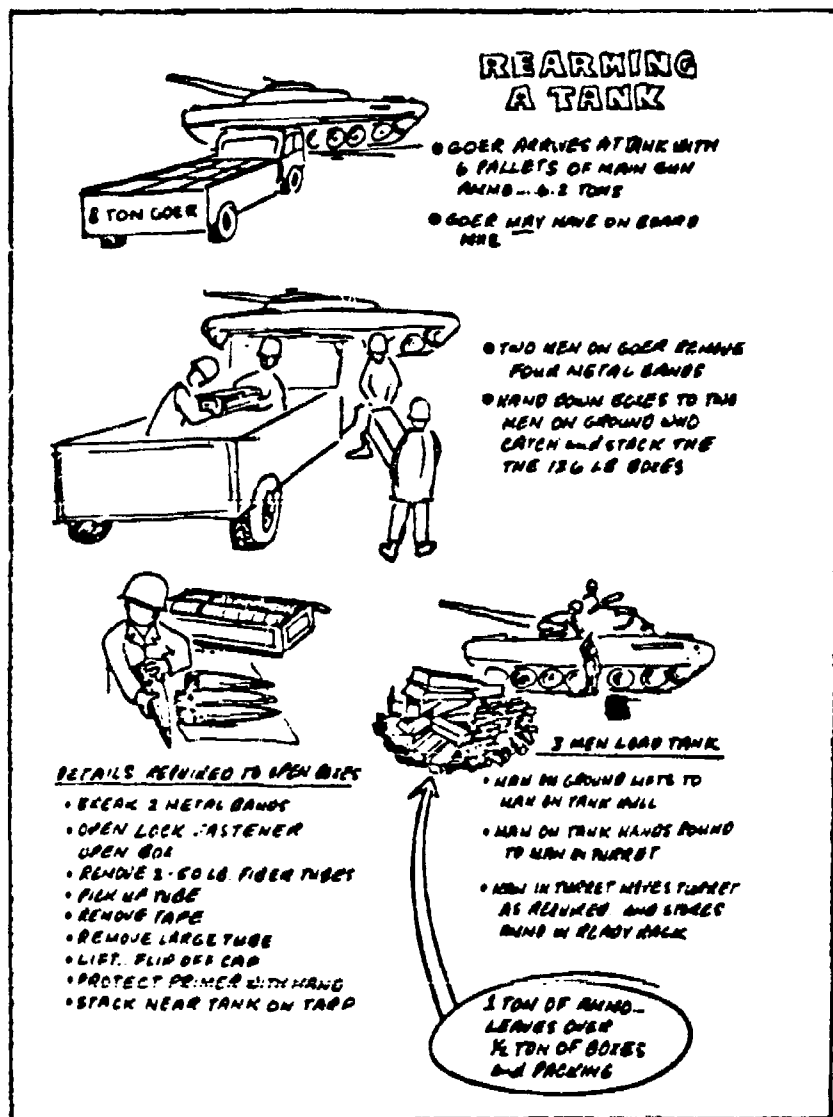


Figure L-12

DISCUSSION: Packaging of ammunition has remained relatively unchanged since tanks were invented--the standard two-round wooden box for tank ammunition looks exactly like that used for 75mm artillery ammunition used in 1915. Packaging has been designed for considerations of safety, extended storage, and above all, a cost-effective design based on port loading and unloading, sea shipment and material-cost criteria. This situation results in a time-consuming, off-line tank rearming procedure (fig. L-12). A basic reason for this procedure is the design characteristic of the tank that requires rounds to be singly hand-loaded through the top of the turret. Also dictating off-line rearm procedures are the requirements to remove rounds from pallets, then from wooden boxes and finally from a fiber container, an entirely manual, manpower intensive time-consuming operation. The resulting pile of refuse makes position concealment difficult if not impossible.

UNIT VEHICLES...
NO ARMORED PROTECTION

The US Army has no armored rearm vehicle for use in forward areas during combat situations. The future battlefield will likely be a high intensity environment with extensive enemy artillery fire throughout the area, making ammunition resupply a difficult matter. This intensity of combat will require that resupply be accomplished frequently, in battle positions and during the battle.

The USALOGCEN is addressing the armored rearm vehicle requirement; DRS will evaluate the use of a modified M113 APC as a short term alternative for an armored rearm vehicle.

TANK BATTALION MHE...
MANPOWER, NO MATERIEL

There are insufficient quantities of properly designed MHE currently available to support wartime requirements for the transportation of ammunition. Ongoing procurement actions of commercial equipment should overcome most of these shortages by FY82. There remains, however, the requirement to develop military MHE as a part of a total tank-arming system.

There clearly exists a need to develop a total tank arming system which addresses packaging, vehicles and MHE that minimize handling in forward areas and expedite rearming at the tank. Past experiments have shown that a 64 percent time-saving can be achieved if ammunition arrives at the tank stripped of all packaging. The problem is to ensure that tank ammunition is delivered to the tanks in a protected, safe

configuration, capable of rapid transfer to the tank.

Development of an improved ammunition supply/resupply system was directed by the VCSA on 24 March 1977. DARCOM, in coordination with TRADOC, has started a system review of tank, artillery and infantry re-arming systems with completion date scheduled for July 1977.

RECOMMENDATION: Conduct a systems review of Class V supply which is user-oriented and extends from the tank to the factory

Direct efforts toward development of a user-oriented system that will reduce:

Personnel exposure,

Time required to rearm armor units, and

Packaging materials arriving at front-line locations.

(Interrelates with similar Personnel and Training recommendations.)

12. FINDING: CURRENT AMMUNITION UNIT STRUCTURE AND DISTRIBUTION DOCTRINE ARE INADEQUATE TO SUPPORT COMBAT OPERATIONS.

AMMUNITION SUPPORT
STRUCTURE INADEQUATE

DISCUSSION: Although current ammunition unit structure and support capability have remained virtually unchanged since World War II, consumption in the form of rounds per tank per day has increased significantly. Rates for other systems, particularly artillery, have increased even more. Projected rates of expenditure for conventional ammunition have increased fourfold over those recently projected for planning purposes.

According to a draft report from the US Army Missile and Munitions Center and School (USAMMC&S), Munitions System Support Structure (MS3), the capability of ammunition units to sustain operations falls far short of requirements. This report addresses those shortcomings and proposes improvements. The DRS evaluation also addresses this situation and recommends the addition of an organic ammunition-handling capability within the DISCOM.

EXCESSIVE TURN
AROUND TIME

Doctrinally, ammunition is distributed to units using supply point procedures. The tank battalion, using the GOER vehicle for ammunition resupply, has an unacceptable turn-around time and travel distance under current doctrine (50-70km or 8-10 hours). The corps ASP is too far to the rear and the GOER is too slow. Improvements to the system are required to reduce the impact of these problems.

Changes in anticipated expenditure rates, tactical employment doctrine and new equipment require revision of Class V doctrine and the ammunition unit support structure.

RECOMMENDATION: Expedite the review of proposals contained in the USAMMC&S Munitions System Support Structure (MS3) draft report and the TRADOC Division Restructuring Study (DRS) which propose improvements to the Class V support system.

13. FINDING: INADEQUACY OF TANK AMMUNITION STOCKS.
14. FINDING: LARGE QUANTITIES OF UNSERVICEABLE 105mm AMMUNITION.
15. FINDING: POOR LOCATION OF PREPOSITIONED WAR RESERVE STOCKS (PWRS) AND BASIC LOAD AMMUNITION STOCKS.
16. FINDING: LIMITED UNIT CAPABILITY TO TRANSPORT REQUIRED AMMUNITION.

DISCUSSION: The above arming findings are presented to complete the overall evaluation of the tank arming situation. These areas are already receiving significant attention but should be afforded continued visibility until the basic deficiencies are resolved.

Renovation programs are now ongoing to reduce the large quantity of unserviceable 105mm APDS-T ammunition presently in the inventory. Engineering studies are nearing completion on problems with HEAT-T and HEP-T ammunition. Funding for the rehabilitation of these types of ammunition is required.

New FWRS ammunition locations reflecting wartime requirements are being developed by DCSLOG and USAREUR. Extensive upgrade programs for ammunition facilities are ongoing. Storage locations must continue to receive significant attention if timely corrections are to be effected.

Limited unit capability to transport required ammunition is being addressed by DRS and the USAMMC&S MS3 Study. The proposed addition of armored rear vehicles, ammunition transfer points and changes in corps unit structure and doctrine may negate the need for further study of battalion vehicle requirements. Requirements should be reevaluated after completion of DRS field testing.

RECOMMENDATION: *Continuous attention is required to ensure final resolution of the following ongoing actions.*

Expedited tank ammunition procurement,

Expedited ammunition modification/renovation programs for tank ammunition,

Repositioning ammunition stocks to permit rapid access to basic loads and timely access to/movement of FWRS stocks, and

Evaluation of unit ammunition transportation capability in conjunction with DRS.

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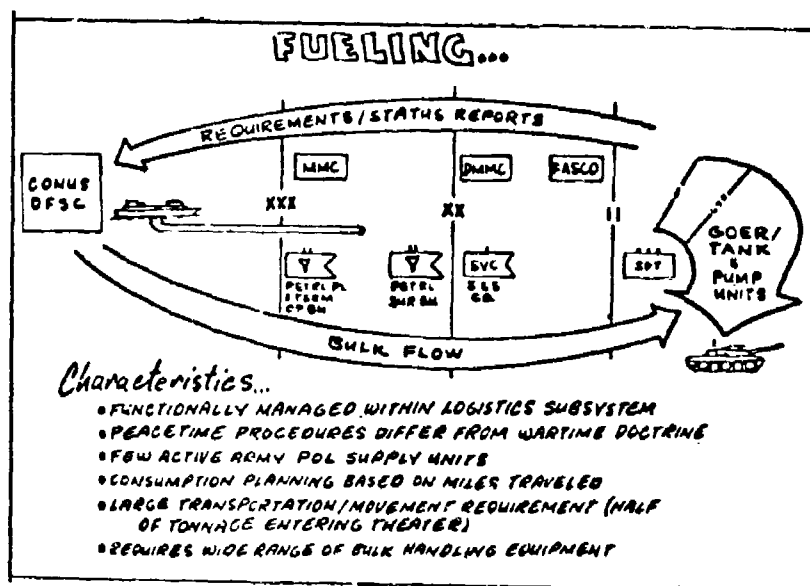


Figure L-13

Fueling supply is functionally managed within the logistical structure (fig L-13). There are separate organizations at every level to accomplish this function and a series of unique report/request procedures to support it. It is an efficient peacetime system, heavily reliant on contractor supply of bulk products and highly civilianized with the trend overseas toward maximum NATO/host nation support. These peacetime procedures differ from wartime doctrine requirements which currently emphasize an Army operated distribution system. However, there are few GS POL supply and distribution units in the active force to support such a network. In a combat theater of operations, bulk POL requirements will comprise approximately half of the incoming tonnage required to sustain combat operations. This large quantity of liquid requires unique bulk handling equipment, consumption planning, and control.

The Class III supply system will remain a functional oriented operation. The Armor force is dependent on the availability of Class III. Any disruption or shortfall will rapidly degrade the combat capability of the tank. The following paragraphs describe findings and appropriate recommendations for improvement to the fueling system.

FUELING Findings

17. FINDING: PLANNING AND PROGRAMING FOR BULK POL HANDLING EQUIPMENT HAVE BEEN INADEQUATE AND, AS A CONSEQUENCE, HAVE JEOPARDIZED FUEL SUPPLY TO ARMOR FORCES IN COMBAT.

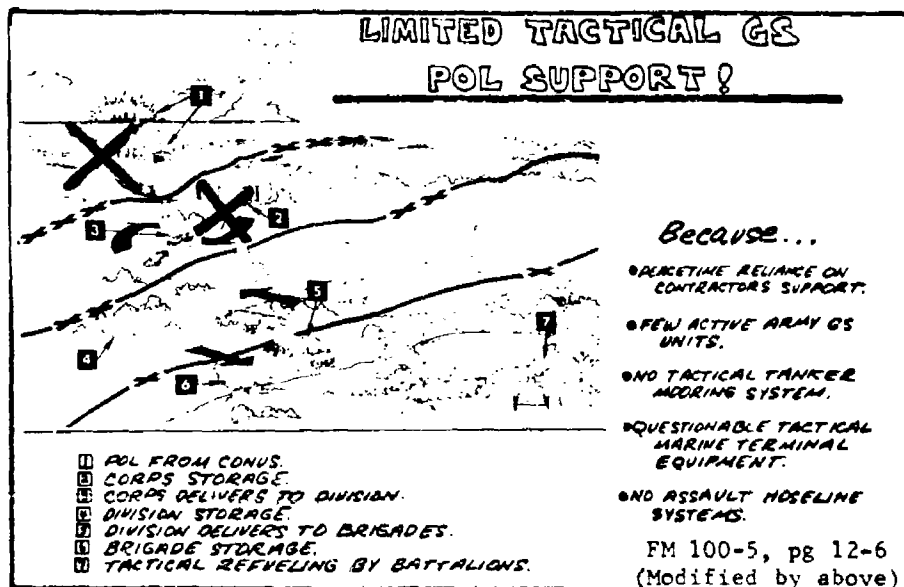


Figure L-14

VOIDS IN FUEL HANDLING SYSTEM

DISCUSSION: The FUELING system has experienced inadequate planning and programing in RDTE and procurement for bulk POL handling equipment. Accordingly, there is a lack of essential equipment including tanker off-loading equipment, storage facilities, and distribution equipment. Because of frequent changes in combat development requirements and the lack of sufficient funds and organization to support development on a systems basis, there are not only voids in the fuel handling equipment systems, but also incompatibility among components. These shortcomings seriously jeopardize effective fuel distribution to armor forces in combat (fig. L-14).

RECOMMENDATION: Develop a POL handling equipment master materiel development plan which covers equipment used in the distribution process from the CONUS producer to the fuel compartments of using vehicles.

18. FINDING: THE TRANSITION TO WARTIME OF THE BULK POL DISTRIBUTION NETWORK WITHIN THE CORPS IS HINDERED BY PEACETIME CONTRACTOR RELIANCE.

WARTIME DISTRIBUTION OF POL RELIES ON
MOBILIZATION OF RESERVE UNITS

TOE	TITLE	ACTIVE	RESERVES
10-202	HH DETACHMENT PETROLEUM GROUP	0	2
10-206	HMC PETROLEUM PIPELINE AND TERMINAL OPERATING BATTALION	1	2
10-207	PETROLEUM PIPELINE AND TERMINAL OPERATING COMPANY	1	3
10-226	HMC, PETROLEUM SUPPLY COMPANY	1	0
10-227	PETROLEUM SUPPLY COMPANY	0	16
10-458	PETROLEUM SUPPLY COMPANY (FWD)	1	0
10-477	PETROLEUM SUPPLY COMPANY (ARMY)	2	0
55-18	TRANSPORTATION MEDIUM TRUCK COMPANY (PETROLEUM)	5	17

Figure L-15

DISCUSSION: The current peacetime reliance on contractor and civilianized support for bulk POL distribution is detrimental to the transition to a wartime situation. Dictated by budget constraints, this reliance leaves few Army GS POL supply and distribution units within the active force (fig. L-15). There are no petroleum supply companies or petroleum pipeline and terminal operating companies in USAREUR. During wartime, combat forces will initially be dependent upon host nation and allied support for general support fuels supply.

The few active force petroleum units are only infrequently exercised to practice their mission. The lack of a sustaining unit base has seriously reduced the number of active Army personnel with POL expertise. However, current US Army POL military distribution doctrine continues to emphasize the operation, with organic equipment, of a complex distribution network.

RECOMMENDATION: Review current doctrine of GS petroleum supply and distribution forward of the corps rear boundary.

19. FINDING: BULK POL STORAGE CAPACITY IS INADEQUATE IN AN
ARMOR DISCOM AND IN COSCOM SUPPORT UNITS.

DISCUSSION: The bulk POL storage capacity in DISCOM and
COSCOM support units is inadequate to support
sustained fast-moving armor operations. The
armor division DISCOM can store approximately
225,500 gallons of bulk fuels. This equates
to less than one day of supply in a moderate
combat environment. Both DRS and the Quartermaster
School have recommended various actions to
correct this shortcoming.

LESS THAN
ONE DAY OF
POL SUPPLY
IN DIVISION

RECOMMENDATION: *Evaluate alternatives which address bulk fuel
storage capacity in DISCOM and in COSCOM support
units.*

20. FINDING: PETROLEUM REQUIREMENTS FORECASTING IS BASED ON
MILES TRAVELED AND DOES NOT CONSIDER HOURS OF
OPERATION.

DISCUSSION: Unit petroleum requirements forecasting is based on miles traveled, using various miles-per-gallon criteria for equipment. The true determinate of fuel consumption, however, is not how far a vehicle moves, but how long the engine is running in various modes - idle, road march and cross country. This is especially true for the tank as its crew maneuvers tactically for position and maintains a running engine when expecting engagement. Evaluation of the Israeli experience in the intense Yom Kippur War revealed that the miles-traveled-technique would have seriously underestimated actual fuel consumption. The Quartermaster School has recognized this situation and has recommended that consumption forecasting be based on hours of operation, using a standard combat day. Use of the standard combat day technique will require development of an hourly consumption rate data base and a standard combat day for all vehicles to be used by planners and scenario developers.

RECOMMENDATION: *Review petroleum requirements forecasting techniques to develop a more accurate projection of actual consumption.*

21. FINDING: THE GOER VEHICLE DOES NOT SATISFACTORILY PERFORM
THE REFUELING, BULK AMMUNITION HANDLING AND
WRECKER FUNCTIONS IN ARMOR UNITS.

DISCUSSION: Tank units are equipped with a support vehicle whose functional capability does not satisfy operational requirements. The GOER vehicle, used as a wrecker, fuel tanker and ammunition carrier, has substantial shortcomings. The GOER can transport only one type of POL, the transporter usually cubes-out before it weighs-out and the wrecker has questionable usefulness. Although capable of bringing fuel and ammunition to a tank in areas and under conditions where other support vehicles cannot travel, GOER roadability limitations severely restrict rapidity of unit convoy support and POL/ammunition distribution operations. All GOER's have large profiles and share safety, trafficability and maintainability shortcomings.

RECOMMENDATION: *Conduct review of transportation requirements in armor battalions to determine alternative solutions for performance of refueling, bulk ammunition carrying and wrecker functions.*

22. FINDING:

THERE IS NO CENTRALIZED MANAGEMENT OF POL EQUIPMENT MATTERS.

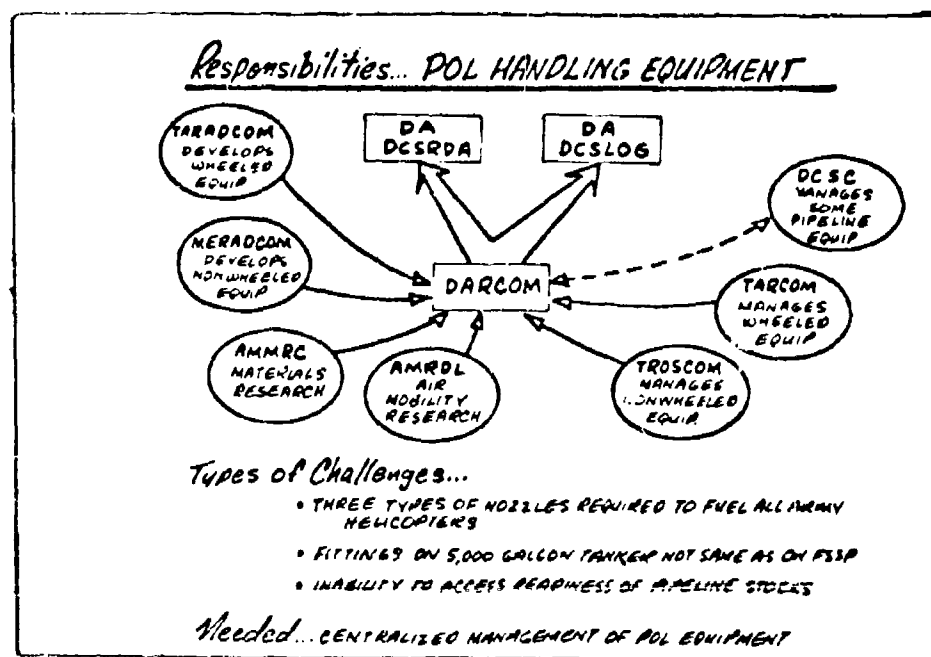


Figure L-16

DISCUSSION: The development and management of POL distribution equipment at the wholesale level is diffuse. There are at least five DARCOM commands and a DLA command involved with little or no central management (fig L-16). This lack of systems management has led to a profusion of incompatible equipment and has left broad equipment gaps in the field POL distribution network.

CENTRAL
MANAGEMENT
LACKING

RECOMMENDATION: Review management structure for POL handling equipment and evaluate the feasibility of system/project management.

MANAGING

The Army logistical management system is complex. Because of the requirement to manage within a resource constrained system, it is driven by the demand for cost efficiency. The result has been to divert attention from the basic goal of rapid transition to support and sustainment of combat forces in a wartime environment. Emerging logistical concepts in echelons above division and progressive development of the forward support concept are causing a favorable refocusing of attention within the retail system. Current procedures have placed greater reliance on the wholesale system to support overseas locations. A major concern, however, is the ability and preparedness of the wholesale system to effect immediate transition to wartime operations on a sustained basis.

The current functional/commodity organization is not sufficiently responsive to provide the type of support needed to obtain the maximum effectiveness of advanced weapon systems. The number of complex weapon systems which will be introduced into the Army in the next few years suggests the need for a weapons system orientation within the logistics system.

WEAPON SYSTEM	
MANAGEMENT NEEDED	

Management areas of concern addressed in subsequent paragraphs are applicable primarily to the logistics system. Establishment of a comprehensive tank management system is discussed in the separate management portion of this report.

MANAGING Findings

23. FINDING: THERE IS A DEGREE OF UNCERTAINTY CONCERNING MISSION RESPONSIBILITIES AND THE COMMAND LINK BETWEEN DARCOM AND THE OVERSEAS MACOM.

DISCUSSION: DARCOM's changing mission has caused it to expand from wholesale logistics and to become more involved in the day-to-day activities of the retail logistics system.

There are numerous examples of DARCOM's involvement in the retail system. Under the Direct Support System (DSS) concept there is a daily interface from wholesale supply activity down to division level. Direct Logistics Support (DLS) establishes a formal technical assistance organization within the division. Daily technical guidance and assistance will be offered at the tank company level by members of the wholesale logistics community. In July 1976, DARCOM assumed an overseas depot mission in Europe. The Modernization of Logistics (MODLOGS) program has substantially increased USAREUR dependence on CONUS support for day-to-day operations.

The continued extension of DARCOM into the operations of the MACOM retail system should be evaluated to determine the most efficient and effective missions for that organization. Areas of uncertainty pertaining to mission responsibility include:

Amount of directive authority of technical assistance personnel to ensure proper operation/readiness of equipment;

Extent of DARCOM overseas depot operations;

Status of the overseas nonmilitary force at the outset of hostilities; and

Responsibility for storage and maintenance of war reserve and POMCUS stocks.

RECOMMENDATION: *Clarify command relationship and responsibilities between DARCOM and the overseas MACOM.*

29. FINDING: CURRENT PEACETIME MAJOR ITEM REPLACEMENT PROCEDURES ARE INADEQUATE AND TOO CUMBERSOME TO EFFECT RAPID REPLACEMENT DURING ANTICIPATED INTENSE COMBAT.

DISCUSSION: Peacetime replacement of unserviceable tanks focuses on the detail necessary to ensure property accountability and efficient use of transportation assets. Precise instructions are issued by message and transactions are recorded in computer bases to effect a one-for-one tank replacement. Backhaul of the unserviceable tank is normally accomplished with the same transport. This procedure is too cumbersome and detailed to meet anticipated wartime processing requirements.

Wartime battle damage replacement operations will be characterized by the need to rapidly distribute many items to the corps/division area simultaneously. Communication and transportation resources will be saturated. Lengthy tank deprocessing times (level "A", long term storage, require approximately fifty man-hours to deprocess) will also impact on timely forward movement. After initial deprocessing, the tank still is not ready to enter the battle. Radio mounts, machine guns, sights, ammunition, fuel, etc., must be available in sufficient quantities and added to the tank before it moves to the battlefield.

Operating personnel question the adequacy of reporting battle loss through the command channel. They suggest the replacement issue would be more effective if processed direct through the MMC's to the organization managing war reserve assets.

RECOMMENDATION: *Develop and test replacement procedures to facilitate bulk transport of complete tanks to selected corps/division locations.*

(Interrelates with similar Personnel recommendation.)

25. FINDING: CONFIDENCE IN THE LOGISTICAL SYSTEM IS AT A LOW LEVEL.

DISCUSSION: Confidence in the logistics system is generally proportional to the availability of required parts and/or maintenance support to remove a tank from deadline status. Although complicated equipment and shortages of skilled maintenance personnel are bothersome, the primary cause of lack of confidence is the perceived lack of responsiveness of the supply system.

The logistician maintains that the regulations and procedures governing the supply system are conceptually sound and adequate to support daily operations. The user, on the other hand, maintains that the supply system is simply not functioning to satisfy his needs in a timely manner. The user philosophy is that when a tank is deadlined, all other actions are subordinated to getting it repaired. If the part is not in the unit PLL, a high priority requisition is entered into the system. In addition, most units simultaneously initiate action through an informal process to obtain the part sooner from other sources. Degradation of the system begins at this point due to lack of confidence in the ability of the supply system to provide the part in a timely manner.

Equally significant is the depth of knowledge of Army personnel in the logistics system. The user must become intimately familiar with the workings of the logistic system if he is to become a professional user. Improved knowledge will tend to build confidence and eliminate, to a large degree, fault requisitions, processing errors, inadequate reconciliation and informal actions to "go around" the system.

Firm discipline, particularly by the user and the logistician, are essential to ensure adherence to existing procedures. Increased discipline, coupled with efforts to improve responsiveness of the supply system, will lead to a more effective system and should restore user confidence.

RECOMMENDATION: *Strengthen user knowledge of the logistics system.*

(Interrelates with similar Training recommendation.)

CONCLUSIONS

An assessment of the logistics system (fig. L-17) using current doctrine suggests that significant modifications are required to improve support to the tank force.

LOGISTICS ASSESSMENT	
FM 100-5	CURRENT SYSTEM
<p>"The only measure of combat service support effectiveness is the <u>percentage of battle-field operable weapon systems</u>."</p> <p>"Supplies, support, weapons are concentrated at critical places and times". The right support must be <u>where needed, when needed.</u>"</p> <p>"<u>Organization for Logistics</u>. Because support in battle depends increasingly on a few primary weapon systems, support must be <u>focused on these critical systems.</u>"</p>	<ul style="list-style-type: none"> o Unclear definition of a weapon system. o Not organized to support a weapon system. o Inadequate feedback/followup system. o Standards/resources don't support readiness desired. o Log system based on peacetime demand/procedures. o Limited mobility of PLL/ASL. o Limited organization/equipment for fire forward. o No armored rear/fix capability. o Inadequate POL equipment/storage. o Inadequate technical expertise forward. o Cumbersome supply procedures. o Inadequate recovery/loss replacement doctrine. o System not designed for smooth transition to war. o Critical systems not defined. o All systems handled equally. o MIS not oriented on weapon system. o Mechanics not trained for weapon systems support.

Figure L-17

As the Army becomes a more equipment intensive organization, there will be a greater dependence on effective supply and maintenance support. The development community must attempt to design equipment that meets battlefield needs, has a high readiness potential and is logistically supportable. These systems, which must defeat the advanced systems of our adversaries, will be complex and complicated to maintain. Operators and mechanics must be trained to the extent necessary to attain the highest peacetime readiness potential and to ensure continuous wartime sustainability.

Weapons system management superimposed over the functional logistical system offers the intensive form of management required to support the tank force. Responsibility for management of the tank must be fixed at each level of command and throughout the technical support structure. This orientation will give focus to resource allocation actions. Such a system orientation will expose problem areas and will accelerate technical assistance, further promoting the combat potential of the tank force.

DEFINITIONS

ACRONYMS

- ASL - Authorized Stockage List. The supplies authorized to be on hand or on order in direct and general support units. Stockage is based upon demand criteria and/or item essentiality.
- ASP - Ammunition Supply Point. Advance point at which ammunition is available for distribution to using units or for distribution by a using unit to individuals or subordinate units.
- CODAM - Combat Damage Assessment Model. A simulation model which allows logisticians to estimate the maintenance load, required repair parts, time to repair and level of repair for combat damage not normally experienced in peacetime and for which no historical data is available or maintained. The model is in an early stage of development and is adaptable to computer processing.
- DLAA - DARCOM Logistics Assistance Activity. An office at Division/Corps/MACOM HQ level designed to supervise and coordinate the activities of assigned DARCOM personnel in expediting the flow of technical assistance/information between the developer-supplier and the using unit.
- DLOGS - Division Logistics System. An automatic data processing system designed to apply automated methods to division level asset management. DLOGS has incorporated management of repair parts, consolidated property book management and Army equipment status reporting system.
- ELS - Direct Logistics Support. A new concept to improve logistics support for weapon and equipment systems by strengthening DARCOM technical channels and enhancing the mission of readiness commands. Currently being evaluated at Fort Hood.
- DRS - Division Restructuring Study. A project designed to reorganize elements of Army Divisions. The concept will be evaluated 10 October 1977 at Fort Hood.

- DSS - Direct Support System. The Army standard supply distribution system for selected classes of supplies which provides for direct delivery of shipments from a CONUS warehouse to the requisitioner (Direct or general support units).

- DX - Direct Exchange. A supply method of issuing serviceable material in exchange for unserviceable materiel on an immediate item for item basis. It is accomplished without the normal property accountability documents and with a minimum of paper work.

- HET - Heavy Equipment Transporter. A large, wheeled tractor and trailer designed for the movement of large vehicles, especially tanks.

- ILS - Integrated Logistics Support. ILS is a composite of all the considerations necessary to ensure the effective and economical support of a materiel system for its life cycle. Principal elements of ILS include the maintenance plan, support and test data, facilities, personnel and training, logistic support resource funds, and logistic support management information.

- ITDT - Integrated Technical Documentation and Training. A project designed to improve technical documentation and to integrate use of these publications with training programs.

- MACRIT - Manpower Authorization Criteria. The number of direct workers required to effectively perform a specified work activity.

- MIS - Management Information System. An integrated group of procedures, methods, policies and may include the computer(s) and its software which is used to obtain, process and analyze data/information.

- MODLOGS - Modernization of Logistics. Ongoing European logistics program to improve USAREUR logistics structure and operations; increase reliance on the CONUS base; and increase host nation and contractual support.

- MMC - Materiel Management Center. A functional logistics management center that is found in the theater, Army, corps and division. The MMC exercises inventory and maintenance management responsibilities.

- MTTR - Mean Time to Repair. The average time required to perform maintenance task- to effect necessary repairs.

- MS3 - Munitions System Support Structure. Draft report prepared by the Missile and Munitions Center and School. Builds an ammunition supply support structure to support anticipated expenditure rates of combat units.

- OJE - On-the-job Experience. The process whereby skills and knowledge are obtained through actual performance of duties. There is no approved, planned program of instruction or experience.

- OJT - On-the-job Training. A training process whereby students or trainees acquire knowledge and skills through actual performance of duties under competent supervision, in accordance with an approved, planned program.

- PLL - Prescribed Load List. The repair parts and maintenance-related items authorized to be on hand or on order at the unit level in support of organizational maintenance. Normally this is based on 15 days of supply.

- POMCUS - Prepositioning of Materiel Configured to Unit Sets. Equipment and supplies, organized per the TOE structure of early deploying CONUS units, which are positioned near the point of intended use. The purpose is to reduce strategic lift requirements and to expedite deployment of CONUS units in a theater of operations.

- PWRS - Prepositioned War Reserve Stocks. Supplies and equipment located near the point of intended use to support combat consumption requirements pending resupply from CONUS.

- RGS - Restructured General Support. An emerging concept which integrates general support supply and maintenance capability for a class of weapon systems into a single technical unit operating under the COSCOM. Being tested 1 March - 30 September 1977 at Fort Hood.

- VTR - Vehicle, Tank Recovery. Armored, tracked vehicle used in maintenance and recovery operations of combat tracked vehicles.

- WARPAC - Wartime Repair Parts Consumption. A project to develop and publish a practical guide for forecasting repair parts requirements that can be used to identify mission essential maintenance operations and to develop stockage lists for contingency operations.

KEY TERMS

Classes of Supply. A method of dividing supplies and equipment into ten meaningful major categories of materiel, within which items are easily identified to each particular class.

Class I. Subsistence including gratuitous health and welfare items.

Class II. Clothing, individual equipment, tentage, tool sets and tool kits, hand tools, administrative and housekeeping supplies and equipment.

Class III. Petroleum and solid fuels. Includes bulk and packaged fuels, lubricating oils and packaged products.

Class IV. Construction materials to include installed equipment and all fortification/barrier materials.

Class V. Ammunition of all types.

Class VI. Personal demand items (nonmilitary sales items).

Class VII. Major end items. A final combination of end products which is ready for its intended use.

Class VIII. Medical materiel including medical peculiar repair parts.

Class IX. Repair parts and components to include kits, assemblies and subassemblies, reparable and nonreparable, required for maintenance support of all equipment.

Class X. Materiel to support nonmilitary programs which are not included in Classes I-IX.

Red Team Assessment. A DARCOM program to provide an overall assessment of field system performance and DARCOM logistics support for selected items of Army equipment.

Tank Ammunition. All tank rounds are fixed, one piece, and electrically fired. Basic types of service 105mm tank ammunition are:

APDS-T: Armor Piercing Discarding Sabot and Tracer. Primary antitank kinetic energy round. High velocity, flat trajectory, small rod penetrator.

HEAT-T: High Explosive Antitank with Tracer. Secondary antiarmor chemical energy round. Medium velocity, shaped charge.

HEP-T: High Explosive Plastic with Tracer. Primary round for lightly armored and wheel vehicles. Low velocity, chemical energy, blast concussion round.

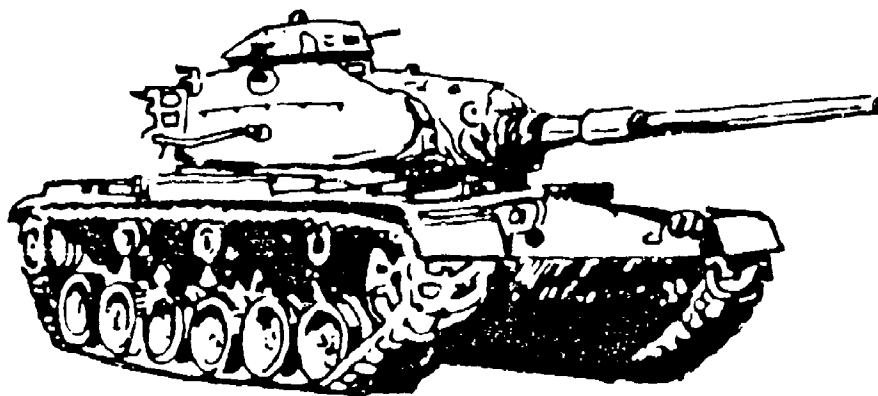
WP-T: White Phosphorus with Tracer. Smoke and screening round. Low velocity chemical energy round.

APERS-T: Antipersonnel with Tracer. Primary round for use against exposed personnel targets. Low velocity, flechette round.

APFSDS-T: Armor Piercing Fin Stabilized Discarding Sabot with Tracer. New technology replacement round for the primary antitank round (APDS-T). High velocity, flat trajectory kinetic energy round. Employs fin stabilization of the penetrator rather than the spin stabilization of the APDS-T round and has a higher density penetrator.

Chapter IV

Tank Forces Management Group



TRAINING

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In-depth analyses along with further documentation and bibliography are available and are contained in the Training Subsystem Appendix, in TFMC office, Pentagon, Room 1A871.

TRAINING

The current armor force is not trained up to the capability of its weapons systems. There is room for significant improvement. Adding to that conclusion is an awareness that armor weapons systems of ever increasing complexity and types are being fielded to meet the threat. This can only lead to the realization that rapid and sweeping changes must be effected in the way armor crewmen and units are trained if armor forces are to have the technical proficiency to achieve their full potential on the battlefield (fig. T-1). The full impact of these training improvements can only be realized if they are accompanied by interrelated changes in personnel, logistics, and development. Even more critical, however, is the necessity to create a management structure that can orchestrate these changes in the Tank Force and sustain the gains made in making it more effective.

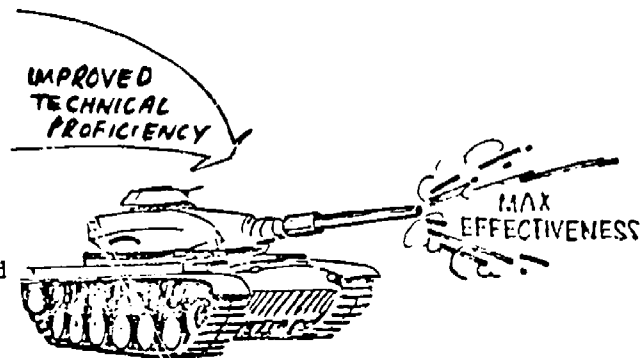


Figure T-1

"THE BEST TANK IS THE ONE
WITH THE BEST CREW."
General Israel Tal
Israeli Defense Force

MAJOR AREAS OF ANALYSIS

The major areas of this training analysis are individual entry level, individual professional development, collective, and combined arms training.

INDIVIDUAL ENTRY LEVEL TRAINING

"Weapons, no matter how powerful, are ineffective in the hands of inept, ill-trained, unsure operators."

FM 100-5

This is the training the individual receives on entering the Army. The Army's training institutions (the service schools and training centers) are responsible for this training. The purpose of this training is to prepare the individual to perform in first-duty assignments.

INDIVIDUAL PROFESSIONAL DEVELOPMENT TRAINING

"Every unit commander of the US Army is responsible for the aggressive professional development of every soldier in his command."

FM 100-5

Professional development training is that training required to upgrade the skills of the individual to do more complex tasks or to assume increased responsibility. Although not stated, it infers training necessary to maintain proficiency in the skills acquired in entry level training. The responsibility for the conduct of this training is shared between the units in the field and the Army's training institutions, and is based on training materials such as the Soldier's Manual, Commander's Manual, Skill Qualification Tests, and training extension courses developed by TRADOC.

COLLECTIVE TRAINING

"Collective training in units should aim at maximum effectiveness with combined arms."

FM 100-5

Collective training is the training of groups of individuals to perform as crews, platoons, companies, and larger units. Although almost exclusively accomplished in units, collective training also relies heavily on individual skills learned in units and training institutions. TRADOC-developed Army Training and Evaluation Programs (ARTEPS) and training devices assist the commander in the planning and execution of this training.

COMBINED ARMS TRAINING

"Training for battle demands forging effective combined arms teamwork."

FM 100-5

At the company level and above, collective training begins to include other branches and arms of the Army as well as other military services and becomes combined arms training. It is an extension of collective training but is important enough to be identified separately. This training should be conducted under simulated combat conditions.

TRAINING INTERACTION

There is continuous interaction of the various trainers in the major areas or phases of training (fig. T-2). Professional development, collective, and combined arms training all feed into one another with continuous infusion, beginning with institutional entry level training.

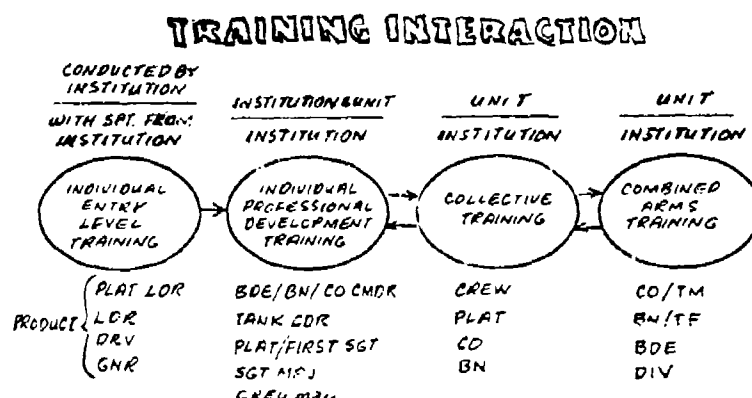


Figure T-2

INDIVIDUAL TRAINING

Entry level and professional development training for both officers and enlisted men currently is too general and does not produce personnel in the Army's Tank Force technically proficient for their duties. Training must be improved not only at entry level, but it must also provide systems specific professional development training throughout a full career. Training course graduates must be qualified for immediate productive service at wartime proficiency levels.

THE INDIVIDUAL TRAINING TREND

As the Army's equipment becomes more numerous and complex, the requirement to bring the individual up to a level of technical competency becomes more and more important to the unit. Because of high costs involved, resource constraints have not permitted soldiers trained at institutions to fully reach desired levels of technical proficiency. As a result, the training at the institution has become more generalized and the responsibility to train the individual to a level of technical proficiency necessary to perform at wartime standards is passed to the unit (fig. T-3).

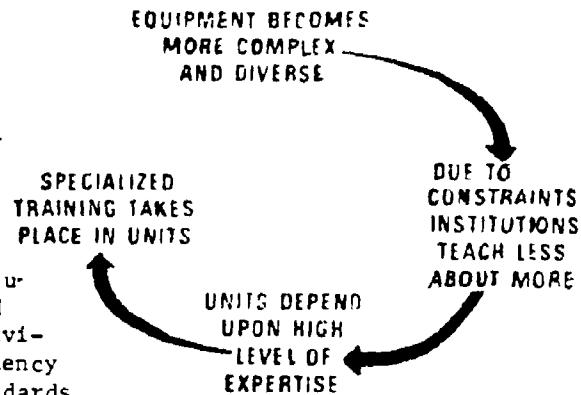


Figure T-3

THE INDIVIDUAL TRAINING DILEMMA

This trend has forced the Army to address the dilemma of how to train and maintain individuals at a high level of technical proficiency on increasing numbers of varying types of increasingly complex equipment, without extending significantly the length of training or raising the entrance requirements of the individual entering the tank force.

COLLECTIVE/COMBINED ARMS TRAINING

Current unit level technical proficiency does not capture the full potential of armor weapons systems. This deficiency is related to the low level of individual technical proficiency. The need for units to spend excessive training time and resources on the individual subsequently decreases available time for collective training.

A directed effort must be initiated to exploit the increase in unit collective and combined arms training time that will accrue with improved entry level training. Of particular importance to upgrading combined arms training is the urgent need to establish a site(s) such as a National Training Center as a replication of total combat environment conditions, serving as a surrogate for combat experience. Finally, Army-wide adherence to established training standards as promulgated in doctrine and training publications, and quantifying training readiness in some reasonable measure of resources consumed, activities accomplished, and results achieved will add to unit technical proficiency.

SPECIFIC RESERVE COMPONENT ISSUES

The potential of Reserve Components to contribute to a "come as you are" war needs to be reexamined in order to capture their special capabilities. Issues to be explored include testing of the Reserve Component tank crew replacement concept, and a reevaluation of the capability of Reserve Component armor units to meet their prescribed readiness objectives with currently available resources of time and materiel.

TRAINING MANAGEMENT

Various management initiatives will also serve to improve the technical proficiency of the armor force. Training management responsibilities at HQDA currently are not clearly defined. This has contributed to a lack of training standardization, variances in program approval and resource allocation, and a failure to delineate responsibilities for individual and collective training. Another training management failure has been the inability to develop an adequate armor training devices program. Given today's resource constraints, training devices that contribute to technical proficiency and thus to combat readiness will become critically important as more complex and expensive systems are fielded. Finally, the external evaluation function of the Armor Center is not providing adequate feedback on training and doctrinal materials, devices, literature, and the appropriateness and quality of the institutional training product.

TRAINING REDUCES IMPACT OF TURBULENCE

The adverse effect of turbulence on proficiency has been dramatically portrayed and is suggested as the major contributor to degradation of armor crew and unit readiness. Many other factors, however, significantly contribute to the armor force not performing to the maximum capability of the weapon system. A standard high state of technical proficiency would minimize the negative impact of turbulence through the existence of a force of highly competent "interchangeable" tank crewmen.

THE PRICE

It is essential to future battlefield success that the Army pay the costs for resources and management intensity to train up to the capabilities of current and new armor weapons systems. The need to achieve this goal cannot be overstated. Solutions to existing training problems will have application in varying degrees throughout the Total Armor Force, although Reserve Component armor force specific problems need to be appreciated and special efforts directed toward their resolution.

The following paragraphs describe the training system and deficiencies and discuss recommendations for their resolution. A more detailed description of this training analysis is an appendix to this chapter, published separately.

ENTRY LEVEL INDIVIDUAL TRAINING FINDINGS AND RECOMMENDATIONS

The most significant individual entry level training deficiency of the Tank Force is in the armor platoon leader, tank crewmen, track vehicle mechanic, and PLL/TAMMS clerk courses. The existing training programs require modification and/or restructuring to permit achievement of the level of technical proficiency required in the units. The proposals accomplish this by focusing the training resources on the most critical functional duties and by limiting the scope of training to discrete type tank, specific position, and/or specific type platoon.

The findings and recommendations in this area of entry level individual training are discussed in the subsequent pages.

ARMOR PLATOON LEADER TRAINING

1. FINDING: ENTRY LEVEL TRAINING FOR ARMOR OFFICERS IS TOO GENERAL AND DOES NOT PRODUCE PLATOON LEADERS TECHNICALLY QUALIFIED FOR INITIAL ENTRY DUTIES.

DISCUSSION: The most frequent criticism from Armor commanders in the field is the inability of the new Armor Officer Basic Course (AOBC) graduate to:

Perform adequately as tank commander,
Train the platoon, and
Coordinate and control the fires of the platoon.

PLATOON LEADER
REQUIREMENTS:

COMMAND TANK
TRAIN PLATOON
COORDINATE/
CONTROL FIRES

Armor platoon leaders' duties are unique from those of other platoon leaders in that while commanding the platoon, they are required to command a tank, one of the platoon's major fighting elements. Currently they must undergo a period of on-the-job training in their units to develop the technical competence and self-confidence they need to properly train and command their platoons.

During this period of apprenticeship, the quality of training within the platoon suffers, and the overall combat effectiveness of the unit is greatly reduced. The objectives of the proposed AOBC are to produce an officer who:

Is trained in all crew positions of a tank,
Has qualified as a tank commander,
Can train the platoon, and
Can coordinate and control the fires of the platoon.

Units will receive platoon leaders who are technically competent and professionally confident, and can step right in and lead their platoons.

RECOMMENDATION: *Train platoon leaders in AOBC to be technically competent in all crew positions, and as a platoon leader and company executive officer by discrete type tank and type platoon (fig. T-4).*
(interrelates with similar Personnel recommendation.)

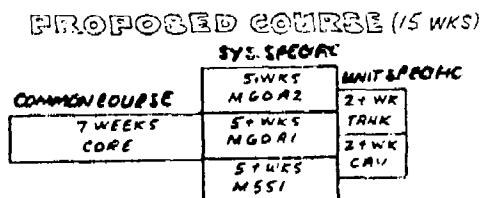


Figure T-4

TANK CREWMEN TRAINING

2. FINDING: ENTRY LEVEL TRAINING FOR ARMOR CREWMEN IS TOO GENERAL AND DOES NOT PRODUCE CREWMEN TECHNICALLY QUALIFIED FOR THEIR INITIAL ENTRY DUTIES.

DISCUSSION: The most frequent criticism of Basic Armor Training (BAT) and Advanced Individual Training - Armor (AIT-A) graduates is that they are only qualified to perform the duties of a tank loader. The unit is therefore required to train its own drivers and gunners. This training competes with collective training requirements for scarce training resources in the unit. The current BAT/AIT-A produces:

Trained loader,
Familiarized gunner, and
Licensed driver.

The proposed training will produce:

Trained loader and qualified gunner for a
discrete type tank

or

Tactical driver with upgraded maintenance
skills for a discrete type tank.

These changes will require the establishment of transition training to accommodate individuals who are required to go from one type system to another. A career management field for armor enlisted soldiers must also be developed and separate MOS's established to manage personnel with significantly different skills. Units will receive tank drivers and loader/gunners who are technically competent to move right into their respective crew positions upon assignment to their units and function at combat level proficiency.

RECOMMENDATION: *Train armor crewmen in BAT and AIT-A as either qualified loader/gunners or tactical drivers on discrete type tanks.*

(Interrelates with similar Personnel recommendation.)

TRACK VEHICLE MECHANIC TRAINING

3. FINDING: ENTRY LEVEL TRAINING FOR TRACK VEHICLE MECHANICS IS TOO GENERAL, DOES NOT PRODUCE PERSONNEL TECHNICALLY QUALIFIED FOR THEIR INITIAL ENTRY DUTIES, AND IS TOO DEPENDENT ON ON-THE-JOB TRAINING/EXPERIENCE.

DISCUSSION: The current initial entry track vehicle mechanic is not trained to perform adequately upon arrival at a unit. The current philosophy is to focus a track vehicle mechanic's skills on particular types of equipment only after assignment to a unit. This OJT/OJE training is done under the supervision of senior mechanics who are also products of this OJT/OJE system. As a result, the training and training standards vary greatly and are usually less than adequate. This built-in requirement for OJT/OJE detracts from the unit's readiness in time consumed and in maintenance not performed or performed incorrectly. As a result, most units, installations, and Major Army Commands have had to establish shadow schools and institute courses of instruction from their own resources to bring the training of their mechanics to an acceptable level of technical proficiency on unit equipment.

PROPOSED TRAINING:

INITIAL ENTRY
SPECIFIC
UNIT OJT/OJE OTHER
SYSTEMS
TRAINED SUPERVISORS

The proposed training program is to train on a discrete type system initially so that the individual has the technical competence to perform his duties immediately upon assignment to his unit. While in the unit, the individual can cross-train on other types of equipment as required. This improved proficiency will result in savings in the cost and time required for maintenance, will contribute to a higher state of readiness, and will create a greater potential for job satisfaction and should lead to a higher rate of reenlistments.

RECOMMENDATION:

Train tank unit track vehicle mechanics at entry level to be system-specific at an adequate level of technical proficiency.

(Interrelates with similar Personnel and Logistics recommendations.)

PLL AND TAMMS CLERK TRAINING

4. FINDING: ENTRY LEVEL TRAINING FOR PLL AND TAMMS CLERKS IS TOO GENERAL AND DOES NOT PRODUCE PERSONNEL TECHNICALLY QUALIFIED FOR THEIR INITIAL ENTRY DUTIES.

LOGISTIC/MAINTENANCE
SYSTEM DEPENDENT ON
PLL/TAMMS CLERK

DISCUSSION: The success of the present logistic/maintenance system is dependent on the technical proficiency of the unit PLL and TAMMS clerks. Currently, initial entry PLL training is only a small part of the Materiel Supplyman (MOS: 76D10) training; TAMMS training is left up to the unit. Adequate training in PLL and TAMMS functions must be recognized for its impact on unit readiness and incorporated into institutional entry level training. These functions should be a major portion of Materiel Supplyman training or should be addressed as a separate MOS and taught as a separate course. Upgrading of the positions should also be considered because PLL/TAMMS clerks have no functionally qualified supervisors in tank force units to supervise additional OJT/OJE. Senior maintenance supervisors are now required to supervise this training, detracting them from doing their own duties.

RECOMMENDATION: *Raise the selection criteria for individuals designated to become PLL and TAMMS clerks and include resident, functional PLL and TAMMS training in entry level training of Materiel Supplyman (76D10).*

(Interrelates with similar Personnel and Logistics recommendations.)

INDIVIDUAL PROFESSIONAL DEVELOPMENT TRAINING

Significant individual professional development training deficiencies of the Tank Force include the absence of formal tank commander, maintenance supervisor, and reclassification training. Other areas of concern are the lack of senior commander and first sergeant technical refresher training, and the apparent difficulty units have in taking full advantage of the TRADOC-exported training materials. This lack of formal courses of instruction has compounded the problem of achieving individual technical proficiency in that the supervisors (commanders, first sergeants, tank commanders, and maintenance supervisors) lack the needed technical competence to supervise and train their subordinates. The gains made by improving technical competency at the entry level will be multiplied by upgrading the technical competence of line supervisors and making maximum use of the available TRADOC training materials. As with entry level training, the proposals focus training on the most critical functional duties and limit the scope of training by discrete type tank.

The specific individual professional development training findings and recommendations with discussion follow.

TANK COMMANDER TRAINING

5. FINDING: THE TANK COMMANDERS' SKILLS ARE NOT DEVELOPED FULLY THROUGH THE CURRENT, NONSTANDARD, ON-THE-JOB EXPERIENCE (OJE).

DISCUSSION:

ONLY ARMY WITH NO
TANK COMMANDER'S
COURSE

The US Army is the only major Army that does not have a formal tank commander's course. Tank commanders have traditionally been trained through on-the-job experience. The "home grown" training of tank commanders is uneven, creates a considerable burden on the training resources of the unit, causes a built-in readiness detractor, and does not have the capability to train tank commanders from Basic Armor Training during mobilization.

INCORPORATE COMBAT
ARMS BNCOC

The Basic Noncommissioned Officer Course (BNCOC) in the Noncommissioned Officer Education System (NCOES) currently focuses only on training the tank commander in the nontechnical aspects of his responsibilities. The proposed tank commander's course would modify this BNCOC to include the validation of tank gunner's skills and the qualification of the student in the responsibilities of the tank commander at Skill Level-3.

TANK COMMANDER'S
COURSE HAS MANY
OTHER USES

Such a course could also be used to train Reserve Component tankers and Basic Armor Training Graduates as tank commanders in time of mobilization. Refresher and transition training for tank commanders and senior officers and NCO's could also be fashioned on this training model.

RECOMMENDATION:

Establish discrete-type vehicle commander's courses at Skill Level-3 for the M60A1 or M60A2 or M551 vehicles incorporating the current combat arms BNCOC concept.

(Interrelates with similar Personnel recommendation.)

MAINTENANCE TRAINING

6. FINDING:

CURRENT MAINTENANCE TRAINING PROGRAMS ARE NOT
PRODUCING COMPETENT TANK TECHNICAL AND
MAINTENANCE MANAGEMENT SUPERVISORS.

DISCUSSION:

PROFESSIONAL
DEVELOPMENT
IS OJE

TECHNICIANS DIVERTED
TO MAINTENANCE
MANAGEMENT

Technical professional development training for most maintenance personnel is extremely limited. Maintenance personnel are developed through on-the-job experience (OJE) which does little to upgrade their technical skills, introduce them to new equipment, or train them in maintenance management procedures. As maintenance personnel progress in rank and seniority, enlisted technicians are forced out of the technical field and into the areas of maintenance management, an area for which they are not trained except through OJT, may not have the aptitude to perform, and that does not use their technical expertise. Professional development training programs for enlisted and warrant officer maintenance personnel should be established to build on the technical competency acquired in the revised entry level training and to upgrade skills in areas of demonstrated proficiency.

RECOMMENDATION:

Establish professional development training programs for tank system maintenance enlisted men and warrant officers which are vehicle specific, provide advanced technical and management training, and recognize separate technical "Master Mechanic" and maintenance management tracks at the higher enlisted supervisory levels.

(Interrelates with similar Personnel and Logistic recommendations.)

TRAINING FOR NCO'S RECLASSIFIED INTO ARMOR

7. FINDING: THERE IS NO STANDARDIZED COURSE OF INSTRUCTION TO PROVIDE TRAINING FOR NCO'S RECLASSIFIED INTO THE ARMOR CAREER MANAGEMENT FIELD.

DISCUSSION: The reclassification of NCO's into Armor MOS's is necessary to provide the number of NCO's required to properly man the Tank Force. This program will continue to be necessary in the foreseeable future and should therefore be recognized as a necessary training requirement.

RECLASSIFICATION IS NECESSARY

TRAIN WHEN RECLASSIFY

The recent reclassification action has created a sizeable portion of the Armor NCO Corps which lacks the necessary training and experience to be technically proficient. This situation results in a lack of confidence, inhibiting the ability of these individuals in their performance as tank commanders and platoon sergeants. It has affected the readiness of CONUS tank units, and the full impact will soon reach USAREUR when sizeable numbers of these NCO's are reassigned overseas.

Formal training of reclassified NCO's will give them the technical competency to do their jobs and should have a favorable impact on morale and retention. The cost of this training is a small price to pay to preserve the technical competence of a large part of the Tank Force noncommissioned officer corps.

RECOMMENDATION: *Develop a resident and nonresident training program which Armor Center, units, and installations can use to provide standardized training to NCO's reclassified into Armor MOS's.*

(Interrelates with similar Personnel recommendation.)

ARMOR FIRST SERGEANT TRAINING

8. FINDING: UNDER CONSOLIDATED ADMINISTRATION AT BATTALION LEVEL (CABL), TANK COMPANY AND ARMORED CAVALRY TROOP FIRST SERGEANTS ARE MORE TRAINERS THAN ADMINISTRATORS, YET, IN MANY CASES THEY ARE NOT TECHNICALLY PROFICIENT TO DO THESE DUTIES.

DISCUSSION: The first sergeant of a company or troop must be technically competent if he is to fulfill his redefined role as the unit senior enlisted trainer. Exportable extension course packages under the NCOES Senior Noncommissioned Officer Course concept provide branch immaterial training in administration, training management, operations, and intelligence. Currently, however, there is no formal mechanism which provides the first sergeant an opportunity to upgrade/refresh his branch material technical proficiency. The proposed training will provide the first sergeant the opportunity to achieve the technical competence to do this job.

RECOMMENDATION: *Establish a Senior NCO Course (resident, non-resident or a combination) for tank and armored cavalry troop first sergeants which is tank system specific and performance oriented.*

(Interrelates with similar Personnel recommendation.)

SENIOR COMMANDER REFRESHER TRAINING

FINDING: COMMAND SELECTED BATTALION/SQUADRON COMMANDERS ARE FREQUENTLY DEFICIENT IN HARDWARE COMPETENCE BECAUSE OF CHANGES IN EQUIPMENT AND LENGTH OF TIME AWAY FROM ARMOR UNITS.

DISCUSSION: Senior commanders frequently find themselves technically deficient on their equipment due to new equipment and/or because of the long times they are required to serve away from branch-related assignments. This technical competence is difficult to regain or attain quickly once faced with the many challenges of command. The importance of the position warrants that these highly selected individuals be given the opportunity to regain technical proficiency on an individual basis before assuming command. This transition/refresher training should be made available to all prospective/selected commanders, especially at the battalion/squadron level.

**TECHNICAL COMPETENCE
DECAYS IN BRANCH
IMMATERIAL ASSIGNMENTS**

RECOMMENDATION: Establish a refresher training course (resident, nonresident, or combination) for all command selected/prospective tank battalion and armored cavalry squadron commanders that is structured to student needs determined by performance and diagnostic testing.

(Interrelates with similar Personnel recommendation.)

COLLECTIVE AND COMBINED ARMS TRAINING FINDINGS AND RECOMMENDATIONS

The lack of emphasis on battalion/brigade live fire, combined arms training seriously degrades the readiness of today's tank forces. Other deficiencies include the need for additional tank crewmen, the lack of adherence to common training standards, and the requirement to more accurately quantify training readiness. Most of these deficiencies are related to and to a certain degree are caused by deficiencies identified in individual training. The proposals in this area capitalize on the individual training improvements recommended in the earlier sections of this report. The Tank Force should be better prepared to conduct and evaluate more realistic live fire combined arms training if the company/troop is authorized an additional crewman per tank, if training standardization is maintained throughout the force, and if readiness reporting is significantly improved.

These areas of collective and combined areas that require significant change are addressed in the following pages.

NATIONAL TRAINING CENTER

10. FINDING:

ALTHOUGH TANK UNIT COMMANDERS RECOGNIZE THAT COMBINED ARMS OPERATIONS ARE THE KEY TO SUCCESS IN COMBAT, THEY SPEND COMPARATIVELY LITTLE TIME TRAINING IN COMBINED ARMS, FOCUSING INSTEAD ON TANK GUNNERY AND, TO A LESSER EXTENT, ON ARTEPS.

DISCUSSION:

The major factor which causes an apparent lack of emphasis on live fire, combined arms training by the Tank Force is the lack of a facility or facilities large enough to accommodate battalion and brigade-size training and still retain realism. The active facilities in CONUS and USAREUR are limited to company-level live fire, combined arms exercises. The ability to employ supporting air and sophisticated battlefield electronic warfare and retain the full scope of field combat conditions is severely limited. Currently, Fort Irwin is one of several attractive alternatives for this type training, containing real estate where battalion-sized live fire, combined arms exercises can be conducted. The Air Force "Red Flag" operation at nearby Nellis AFB, Nevada can provide the full integration of the combined arms under battlefield conditions (fig. T-5).

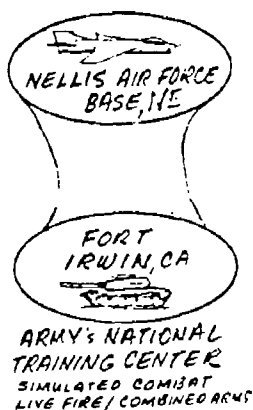


Figure T-5

It is possible for the Army to alert and deploy a tank unit for combined arms, live fire training under simulated combat conditions. Such training will go beyond home station training and be a post-battalion level ARTEP exercise. For these reasons, a large unit, live fire, combined arms training facility should be established.

The responsibility for the development of this National Training Center is shared by FORSCOM and TRADOC. Presently there appears to be a basic difference in their conceptual approach. FORSCOM is emphasizing desert environmental training while TRADOC looks to the facility as a European analogue for simulated combat at the task force level. The requirement for resolving

this conceptual difference, the high dollar investment of reopening Fort Irwin, and the necessity to coordinate with the National Guard indicate a necessity for intensive management. The project manager approach appears to be most appropriate as it would provide the necessary management focus to achieve the goals of the National Training Center and provide a level of operation that will permit detailed coordination between DA staff, FORSCOM, TRADOC, and ultimately USAREUR.

RECOMMENDATION: *Establish a Project Manager to develop the National Training Center concept.*

TRAINING STANDARDS

11. FINDINGS: CURRENT TANK CREW TRAINING WORLDWIDE IS NOT STANDARDIZED, DEGRADING CREW PROFICIENCY AND COMPOUNDING THE EFFECTS OF NORMAL ROTATIONAL TURBULENCE.

DISCUSSION: As long as the US Army retains the individual replacement system, it will be of utmost importance that tank force soldiers be trained so that they are interchangeable. For example, crewmen trained at Fort Knox, assigned initially to FORSCOM and then to USAREUR should find identical training techniques, procedures, and evaluation standards. This is not the situation today (fig. T-6).

TANK GUNNERY VARIANCES

DIFFERENCES . . . USAREUR AS COMPARED TO FM 17-12/CONUS

MACHINE GUN ENGAGEMENTS ONLY FUNCTIONAL TEST

EMPHASIS ON FIRST ROUND MAIN GUN HITS

NO BATTLE-SIGHT ENGAGEMENT REQUIRED

TWICE AS MANY MULTIPLE TARGET ENGAGEMENTS

TWICE AS MANY ENGAGEMENTS FROM RANGE CARD DATA

RANGES TO TARGETS SHORTER

NO TACTICAL FIRING POSITIONS REQUIRED

AVERAGE OPENING FIRE TIMES DIFFER

NO REQUIRED CLOSING TIME

NO CREDIT FOR AMMUNITION CONSERVATION

RIGID, COMPLEX QUALIFICATION CRITERIA

INCOMPLETE CRITIQUE

Figure T-6

STANDARDIZED TRAINING
MINIMIZES NEGATIVE
IMPACT OF TURBULENCE

Commanders and Soldiers Manuals, How to Fight Manuals, and Tank Gunnery Manuals establish these standards. When there is a variance, the negative effects of personnel rotation are made worse because extensive individual retraining is required at the new station. Tank Force units should, except for the most critical local requirements, adhere to the same training standards and procedures. This would reduce the negative impact of personnel turbulence and enhance the ability of the Army's individual replacement system to support the Tank Force in peacetime and in combat. Since the Armor Center has proponency for development of doctrine and the training literature and devices, it should provide the necessary assistance to the field to ensure training standardization.

RECOMMENDATION:

Standardize armor force training

Consider establishing a system to accredit or certify key training activities and facilities.

(Interrelates with similar Personnel recommendations.)

ADDITIONAL TANK CREWMEN

12. FINDING: THE CAPABILITY OF THE TANK IS SERIOUSLY DEGRADED BY THE SHORTAGE OF TRAINED PERSONNEL AND THERE IS NO READILY AVAILABLE SOURCE OF TRAINED CREWMEN IN THE UNIT TO FILL THESE SHORTAGES.

DISCUSSION: The tank must have a full, four-man crew to be effective in training and in combat. The loss of one crewman reduces the capability of the tank to something less than 50% of its effectiveness. An individual tank crewman cannot train in his individual position skills without the other crewmen present because his skills require their interaction. Similarly, the presence of all crew members is required to conduct crew training.

CONFIRMED BY
FIELD TEST

Field tests in M60A1 tank units conducting gunnery exercises without a gunner revealed that three-man tank crews have considerable problems acquiring and engaging targets, especially multiple targets. In similar tests with the M60A2 and M551 tanks, the fire control systems of these vehicles require three-man crews to operate without a tank commander because the tank commander has no main gun sight. Tactical direction and target acquisition suffered dramatically in the crews that had no commander. With all type tanks, the ability to conduct sustained combat or combat-simulated operations completely required the energies and skills of the full crew; with anything less than a full crew, sustainability was almost impossible.

Temporary arrangements such as maintaining battle rosters are self-defeating if they include people to fill positions who are not trained for the positions they occupy on paper.

RECOMMENDATION: *Authorize and assign one additional crewman for each tank in the company/troop.*

(Interrelates with similar Personnel recommendation.)

TRAINING READINESS QUANTIFICATION

13. FINDING: QUANTIFIABLE TRAINING READINESS STANDARDS FOR TANK UNITS NEED TO BE UPGRADED.

DISCUSSION: The current method of measuring training readiness in the Unit Readiness Report (URR) is subjective and lacks credibility in the field. The goals which must be achieved to attain a certain training readiness condition lack clear definition. The method presently used in the quantification of training, i.e., weeks of training required to achieve the goal, is subject to a broad range of personal interpretations by the commander. There is a need to quantify training readiness so that it has meaning in achieving a state of overall readiness of a unit without changing the Army's training philosophy of decentralization or concept embodied in the Army Training and Evaluation Program (ARTEP). FORSCOM's initiative to define what training must be accomplished to be C1 (fig. T-7) is a step in that direction but needs to be expanded to cover C2, C3, and C4.

TRAINING READINESS

	Weeks
C1	0-2
C2	3-4
C3	5-6
C4	7+

FORSCOM TRAINING READINESS

TRAINING EVENT	MINIMUM REQUIREMENT	FREQUENCY
TANK GUNNERY	All crews	Annually
TABLE VIII		Service ammo
SUSTAINMENT GUNNERY	All crews	Quarterly subcaliber or laser
ARTEP TANK PLATOON		
ACTIVE DEFENSE	80%	Semiannually
MOVEMENT TO CONTACT	80%	Semiannually
HASTY ATTACK	80%	Semiannually
BATTLE RUN TABLE IX	80%	Semiannually

Figure T-7

The DA draft URR to be tested March-May 77 retains the estimation of weeks to be C1 but eliminates the purely subjective judgment and uses the ARTEP as a guide. It would appear

that the commander's judgment/subjective evaluation of training readiness should continue to be included in the narrative, but it should be based on more clearly identifiable criteria.

RECOMMENDATION: *Develop URR Training Readiness Criteria for tank force units which includes an objective evaluation process.*

(Interrelates with similar Personnel recommendation.)

RESERVE COMPONENT (RC) SPECIFIC FINDINGS

Most findings and recommendations presented thus far have common interest for Active and Reserve Components. The two findings discussed in the following paragraphs are different in that they apply only to the Reserve Component Tank Force. The first is a concept by which the Reserve Components will train and maintain a force of readily available tank crew replacements for deployed and early deploying Active and Reserve Component Tank Force units. The second describes a requirement to match readiness with provided resources of Reserve Component Tank Force units. Both build on other recommendations of improved individual technical competence, more effective collective training, quantification of training readiness, reliance on training devices, and improved training management.

The two recommendations that apply specifically to the Reserve Components are at subsequent pages.

TANK CREW REPLACEMENTS

14. FINDING: THERE IS NO PRESENT CAPABILITY FOR PROVIDING TRAINED TANK CREW REPLACEMENTS TO THE ACTIVE ARMY FROM THE RESERVE COMPONENT WITHOUT DEGRADING RC UNIT READINESS. THIS SITUATION IS FURTHER AGGRAVATED BY THE DWINDLING SIZE OF THE INACTIVE READY RESERVE (IRR).

DISCUSSION: Studies indicate that during the early days (D+30 to D+45) of a major conflict (1982 time-frame), battle losses will result in having more tanks available than trained crews to man them. By 1982, the tank fleet will be considerably larger than present, while the availability of reserve armor crewmen from the IRR will have significantly diminished. To meet this expected early surge on the battlefield in the requirement for trained armor crewmen replacements, present conditions make it necessary to draw down other later deploying Active and Reserve Component tank units. In effect, this renders these units not combat ready. This is not an acceptable planning concept; an alternative is required.

Alternatives to meet early-on tank crew replacements include drawing immediate replacements (D to D+30) from within active tank units by authorizing one additional crewman per tank, and by training additional tank crew replacements in the RC that are available for early deployment (D+30 to D+45). Under the latter plan, reservists will be recruited and trained to high levels of sustained proficiency in crew duties and tank gunnery. To enhance their training, crews will be affiliated with units in USAREUR and will conduct annual gunnery qualification with their host units in Europe. USAR training divisions are ideally suited to provide required carrier units and instructors. While minimum equipment resources will be needed for training, a small augmentation of active instructors and advisors may be required initially.

RECOMMENDATION: *Develop and implement the program for training tank crew replacements in RC to determine feasibility and resource requirements. Utilize USAR training divisions to provide carrier units and instructors, and provide a small augmentation element of active advisors and instructors to initiate the program.*

(Interrelates with similar Personnel recommendation.)

RESERVE COMPONENT ARMOR UNIT READINESS

15. FINDING: RESERVE COMPONENT ARMOR UNITS ARE NOT ATTAINING AND MAINTAINING PRESENTLY ASSIGNED TRAINING READINESS OBJECTIVES.

DISCUSSION: A program to improve the total Army Tank Force must include required actions to improve the readiness of RC armor units. Studies, analyses, and reports reveal that maintaining training readiness levels in RC units continues to be difficult and generally cannot be sustained. Current standards require RC Armor Bn/Sqdn to achieve a training readiness of C2 (AR 350-1). With the exception of roundout units, FORSCOM has established interim training readiness objectives for RC Armor Bn/Sqdn of C3.

Cost Operational Effectiveness Analysis RES COMP TANK BATTALIONS





	DEPLOYMENT DATES				
	D+30	D+60	D+90	D+120	D+180
 FULL TIME	??	20%	10%	5%	
	??+	++	++	+	
	??+	++	++	+	
	??+	++	++	+	

Figure T-8

The levels of required resources to support the higher levels of readiness established by HQDA must be quantified (fig. T-8). The Army must pay the price for a reserve force capable of maintaining the levels of readiness required to meet total force planning.

Resources currently allocated to support RC training readiness (equipment, training time, full time unit members, authorized strength, etc.) are recognized and accepted as the minimum essential levels to conduct effective, normal unit training.

RECOMMENDATION:

Conduct a cost and operational effectiveness analysis (COEA) of resources currently allocated against training readiness objectives. Quantify training readiness for RC tank units in terms of resources required, activities accomplished, and/or results achieved. Provide resources necessary to attain and maintain premobilization training objectives.

TRAINING MANAGEMENT

All levels of management from battalion through MACOMs, TRADOC and its training institutions, and Department of Army, participate in training management. To be effective, responsibilities to include those for resource allocation need to be fixed at each level. In addition, a systematic review and analysis capability must be provided that includes an appropriate system for review. Currently, there are deficiencies in this vital area that adversely impact on the training environment.

Training management recommendations are discussed in detail in the following pages.

TRAINING RESPONSIBILITIES

16. FINDING: TRAINING MANAGEMENT RESPONSIBILITIES AT HQDA ARE NOT CLEARLY DEFINED.

DISCUSSION: The responsibility for training at the Department of Army level is primarily shared between ODCSOPS and ODCSPER. A clear delineation of responsibility is difficult, and may not be possible to achieve because of the complexity of the subject. There are, however, opportunities to restructure and refine responsibilities and to rewrite certain capstone documents. Such an approach would do much to clarify the critical program approval and resource allocation issues and to ensure greater training standardization. Drastic alternatives such as giving ODCSOPS or ODCSPER or another agency total responsibility for training may not be practical. There are accommodations that can be made and relationships that can be refined to achieve this end while avoiding the traumatic side effects of a major staff reorganization.

RECOMMENDATION: *Continue working toward a solution with priority to retaining as much organizational integrity of existing staffs as possible while simultaneously fixing responsibility by program element for program approval and resource allocation.*

TRAINING DEVICES

17. FINDING: THE TANK FORCE HAS NOT TAKEN ADVANTAGE OF CURRENT AND PROJECTED TECHNOLOGY TO IMPROVE TRAINING AND REDUCE TRAINING COSTS THROUGH THE USE OF TRAINING DEVICES.

DISCUSSION: The potential of training devices to assist in realistic and effective training at minimum cost has just begun to be realized. The high initial cost of research and development, lack of consensus of requirements within the armor community, lack of centralized management, and diffusion of development and acquisition responsibility have prevented the development and fielding of adequate numbers and types of training devices.

Current technology can provide better training devices. This knowledge combined with present fiscal constraints on training resources have convinced training managers and commanders in the field that training devices have an important role. The extensive use of adequate training devices could dramatically reduce the operating and weapons training costs of a unit, permit continuous realistic training, avoid expensive range and training area construction, and free training resources to be redirected into training where training devices cannot be applied. The net result is the ability to achieve and maintain a high state of unit readiness at minimum cost. Fort Knox has developed a strategy, plan, and program but the training devices still lack centralized direction at the proper levels.

RECOMMENDATION: *Establish a Product Manager for armor training devices.*

(Interrelates with similar Development recommendation.)

TRAINING FEEDBACK

18. FINDING:

THE EXTERNAL EVALUATION FUNCTION OF THE US ARMY ARMOR SCHOOL IS NOT PROVIDING ADEQUATE REVIEW IN REGARDS TO TRAINING MATERIALS, DEVICES, MANUALS, SQTs, ARTEPs, AND THE APPROPRIATENESS AND QUALITY OF THE INSTITUTIONAL TRAINING PRODUCT.

DISCUSSION:

The feedback link between the Tank Force units in the field and the Armor Center has not been effective. As a result, the Armor Center is not as aware as it should be of what is being done by the units in the field and what impact the Center is having on these activities. Without this link, tank units consciously or unconsciously modify or change important doctrine and procedures. Examples of this are the dissimilarities which exist in tank gunnery between FORSCOM and USAREUR units and the modifications being made by units to the ARTEP concept.

This evaluation link can also be used to assist units in the field in finding innovative training solutions to effect new doctrine.

With the cooperation of the MACOM's, important on-going training activities can be accredited and/or certified. Products of the institution, (trained personnel and training materials and literature) can be systematically evaluated so that timely institutional training adjustments can be made.

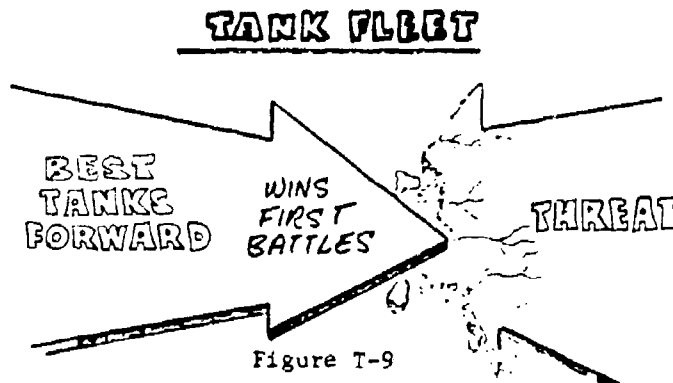
The most appropriate agency to do this is the Evaluation Directorate of the Armor Center with support from the instructional departments and Training and Combat Development Directorates of the Armor School and Armor Training Center.

RECOMMENDATION:

Energize the evaluation elements of the Armor Center to coordinate the training review function, emphasizing assistance to the units in the field. Inform field armor units that they may seek assistance from this element to include requesting assistance visits down to battalion level.

PROCUREMENT, DISTRIBUTION, AND DEPLOYMENT

The US Army tank fleet at any point in time represents a fixed asset procured for one purpose--destruction of the enemy. The challenge to Army planners is to procure the best equipment and to position it in such a geographic configuration and in type units to gain the maximum combat capability return on the fleet investment (fig. T-9).



In the near future the Army will add significantly to both the quality and quantity of this tank fleet. The total armor force, active and reserve, tank and cavalry, must be considered in an analysis of priorities for the distribution of this equipment. In an outnumbered scenario, the best tanks must be in the most critical locations and in units in accordance with their potential to influence the outcome of the battle. Furthermore, armor force assets in a war reserve category will be used early in the battle. Considerations of type storage, distribution of these assets, and procurement of adequate numbers of subcomponents of the end item are crucially important to the timely integration of those assets into committed units.

Finally, it becomes important to the armor force that equipment distribution priorities permit tank and cavalry units to be equipped and organized in a consistent manner worldwide. While imbalances between the overseas base and sustaining base may restrict flexibility in equipment priorities, sufficient leverage is available to ensure that armor force organization and equipment is consistent and permits interchange of personnel without serious combat ready degradation.

At the subsequent pages is a detailed discussion of the Tank Force's recommendations in the areas of procurement, distribution, and deployment.

DISTRIBUTION AND DEPLOYMENT

19. FINDING: CURRENT PROCUREMENT, DISTRIBUTION AND DEPLOYMENT PRIORITIES DO NOT COMPLETELY OPTIMIZE COMBAT CAPABILITY AND DO NOT EXPLOIT THE SIGNIFICANT INCREASE IN QUALITY AND QUANTITY OF THE ARMY TANK FLEET. THE CURRENT PROLIFERATION OF VEHICLE TYPES AND ORGANIZATIONS IN CAVALRY UNITS DEGRADES COMBAT POTENTIAL AND EXACERBATES PROBLEMS IN TRAINING, PERSONNEL MANAGEMENT, AND LOGISTICS SUPPORT.

DISCUSSION: Plans to procure less XM-1 tanks than needed to equip units to fight the European battle do not capture the full combat capability possibilities offered by current technology. In addition, current and projected distribution of the fleet does not always place the best tanks in units in accordance with their anticipated commitment to combat. Currently, some lower priority, later deploying units have better tank and other armor vehicles than units to be committed early to battle. This is particularly true in armor POMCUS stocks for REFORGER and 2+10, and in FORSCOM cavalry units that will deploy with equipment. The DAMPL, although providing for priority variances, does not appear to be a sufficiently precise management tool for tank distribution priorities. Management practices need to be reviewed to ensure the system can respond to the precise management needs of tank requirements and distribution.

In addition, it is questionable whether current wartime plans to distribute prepositioned war reserve stockage are valid and if tanks so positioned will be compatible with those they are intended to replace. PWRS stockage adequacy and planned battlefield distribution plans need to be the subject of an intensive review and analysis.

Cavalry units worldwide vary widely in organization and equipment. Europe cavalry units have a command-modified organization while FORSCOM

cavalry units are organized under the standard H-series TOE. Taken together with the variances in equipment in cavalry units worldwide, this creates a difficult environment for training standardization. Scouts (11D) currently are trained at Fort Knox on the M113A1 with cal 50 machine gun but in fact might be assigned to an M114A2 (20mm), M151A2 (M60 mg), or a M113A1 (TOW or DRACON). Professional development training of soldiers rotating between units organized differently and with differing vehicles and weapons is difficult to impossible. This in turn lowers unit proficiency and combat capability, and exacerbates the effects of rotational turbulence. This problem is significant since cavalry units comprise about 30% of the total armor force. Reorganization of all cavalry units to the new TOE would not only reduce the organization and vehicle proliferation problem, but would significantly increase the combat capability of the armor force. An urgent need exists to reanalyze equipment priorities to permit reorganization as rapidly as possible, with specific priority to Europe-based and early deploying REFORGER and 2+10 units.

RECOMMENDATION:

Conduct an intensive review of current requirement, distribution, and deployment practices to ensure the best tanks and associated equipment are forward and in a configuration (PQRS, POMCUS, organizations) where they can influence the outcome of the battle early and on a sustained basis.

(Interrelates with similar Development, Logistics, and Personnel recommendations.)

TANK SUBCOMPONENT PROCUREMENT REQUIREMENTS

20. FINDING: THE DIFFERENCE IN THE WARTIME REPLACEMENT FACTOR (WARF) RATES BETWEEN THE TANK AND ITS MAJOR SUBCOMPONENTS RESULTS IN AN APPARENT PROCUREMENT VARIANCE THAT COULD CAUSE ISSUE OF INCOMPLETE TANKS IN WARTIME.

DISCUSSION: Major subcomponents of the tank that have separate TOE lines, e.g., machine guns, searchlights, and radios, are procured independent of each other. Their MAO is established separately and includes quantities procured both for initial issue and to replace losses determined by a wartime replacement factor (WARF). Because each subcomponent WARF is determined independently, a variance exists between the numbers of tanks procured and the major subcomponents. Unless wartime plans provide for recovery of these items and reissue to tanks, such a difference could result in tanks being issued from war reserve without essential equipment.

RECOMMENDATION: *Review procurement objectives and wartime replacement plans to ensure that each wartime replacement tank is issued complete.*

(Interrelated with similar Logistics recommendation.)

ORGANIZATION/DOCTRINE

The importance of the interrelationship of doctrine, equipment and organization cannot be overemphasized. These factors determine how an Army will be equipped, organized and how it will fight. New equipment is nearing production and deployment to the Tank Force. The new How to Fight manuals take into account the complexity and lethality of the modern battlefield. They stress the vital necessity for combined arms cooperation for success on the battlefield. The current division perpetuates the peacetime "pure" organization of tank and mechanized infantry battalions which doctrine directs be cross-attached for war. Combined arms training is a weak aspect of Tank Force training.

21. FINDING:

TANK AND MECHANIZED INFANTRY BATTALIONS
TRADITIONALLY FIGHT AS COMBINED ARMS TASK
FORCES BUT ARE ORGANIZED AS PURE TANK AND
MECHANIZED INFANTRY BNS.

DISCUSSION:

From World War II to the present, Armor unit doctrine or organization for combat has not changed. Some allied national maneuver battalions are now organized in a combined arms configuration. Similarly, US armored cavalry units also have a combined organization. Combined arms operations are clearly the US doctrine for combat.

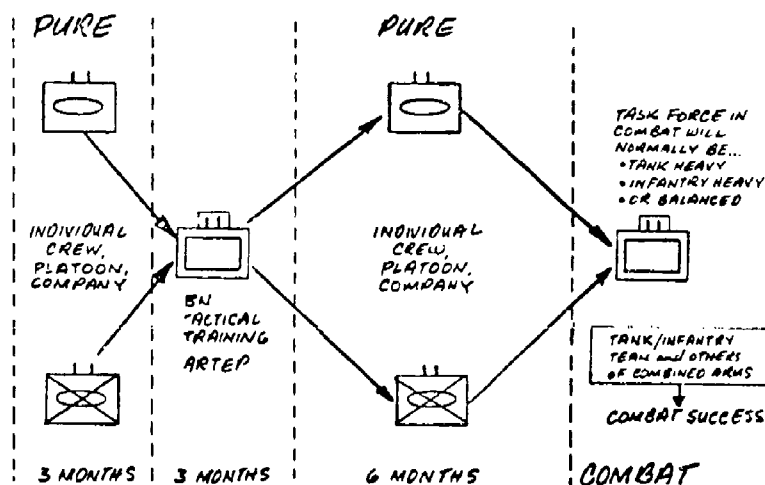


Figure T-10

Figure T-10 indicates that a Tank Force unit is only in a combined arms mode three months a year for peacetime training while that same unit

will probably be in a combined arms mode full time for combat. In the past, battalion organizations were kept "pure" to facilitate individual training. Initiatives to improve individual training will reduce this requirement considerably. Consequently, units will be able to spend more time training in combined arms configurations. In a professional, highly trained force, the concentration on combined arms training to fight a "come as you are" short, violent war is a compelling reason to consider organizing combined arms TOE maneuver units.

The US Army has a split in training responsibility for mechanized units between the Armor Center at Fort Knox and the Infantry Center at Fort Benning (fig. T-11).

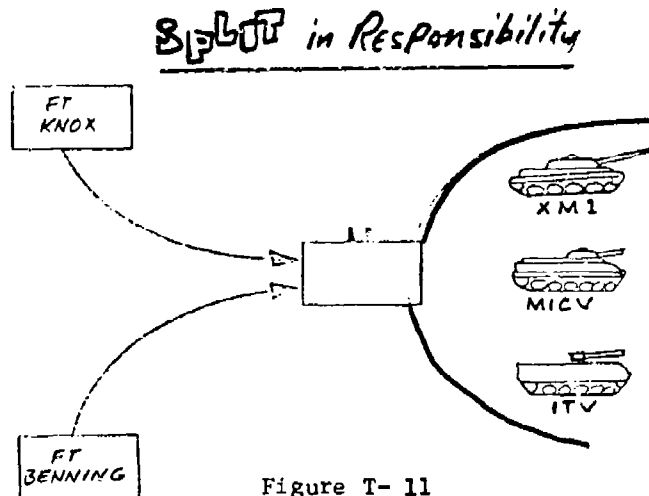


Figure T- 11

RECOMMENDATION:

Concurrently with ongoing doctrinal reviews and organizational tests, develop and evaluate a combined arms battalion.

SUMMARY

These recommendations are a result of a thorough analysis of the Tank Force training system and have been validated in interviews with training managers in the field. Improved technical competence of the Tank Force will do much to close the gap which exists between the proficiency of the tank crewmen and supporting personnel and the capability of their equipment.

Improved entry level and professional development training at the institution will reduce the requirement to conduct individual training in the unit. In turn, it will be easier for units to integrate individual skills into collective skills. This will free resources which can be redirected into more advanced combined arms training. Combined arms training under simulated combat conditions will bring the Tank Force closer to achieving its ultimate goal--full combat readiness.

The equipment investment and combat power return potential of the Tank Force more than justify a far greater training investment. This increased training investment must be long term and in harmony with improvements in the other systems. These training recommendations will have a synergistic effect on the Tank Force if they are made in a total weapons systems focus.

It is not the capability of the tank that wins the battle, but rather it is the ability of the crew to use the capability of the tank which is decisive.

DEFINITIONS

ACRONYMS

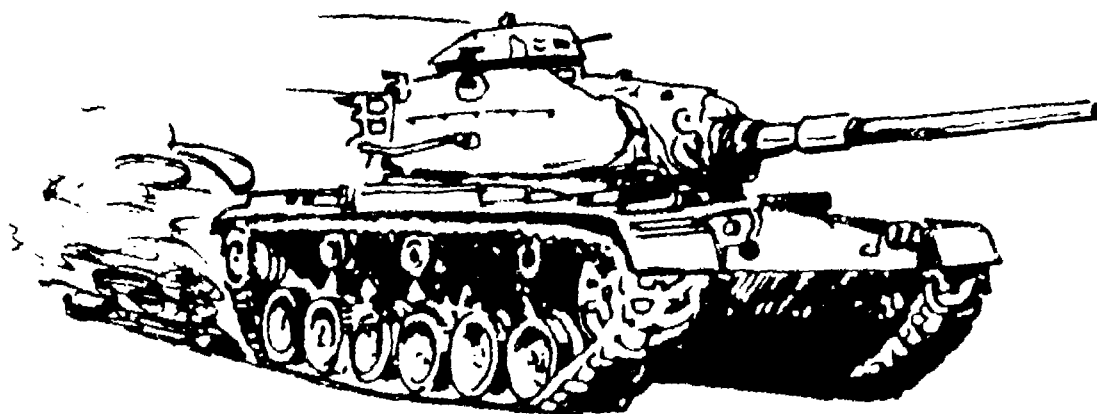
- AIT-A - Advanced Individual Training - Armor. Training given by the US Army Training Center, Armor at Fort Knox to enlisted personnel subsequent to completion of basic training so as to render them qualified for the award of an armor military occupational speciality (MOS).
- AOBC - Armor Officer Basic Course. Entry level course given by the US Army Armor School at Fort Knox to newly commissioned armor officers.
- ARTEP - Army Training and Evaluation Program. A Department of the Army publication providing guidance for training and evaluating training of units. It provides a list of tasks ranked according to criticality which must be accomplished by each element of the unit in order for it to accomplish its table of organization missions.
- BNCOO - Basic Non-Commissioned Officer Course. The Skill Level-3 training course for noncommissioned officers as a part of the Non-Commissioned Officer Education System (NCOES).
- BAT - Basic Armor Training. Entry level armor MOS training given to newly inducted or enlisted personnel who have had no prior military service. It is now a combination of basic combat and advanced individual training under the one station unit training (OSUT) concept.
- CABL - Consolidated Administration at Battalion Level. A program to move company level administration to the battalion headquarters. It includes the administration for personnel, supply, and maintenance at full implementation.
- DAMPL - DA Master Priority List. Prepared annually and displays major commands, activities and units in a relative order which determines priorities for the allocation of resources.
- FORSCOM - Forces Command. The major Army command which controls forces in the Continental United States, Hawaii, Alaska, and Panama.
- MOS - Military Occupational Specialty. A term used to identify a grouping of duty positions possessing close occupational or functional relationship that an optimal degree of interchangeability among personnel so classified exists at any given level of skill.

ACRONYMS

- OJE - On the job experience. A training process whereby trainees acquire knowledge and skills through actual performance of duties.
- OJT - On the job training. A training process whereby trainees acquire knowledge and skills through actual performance of duties under competent supervision, in accordance with an approved plan.
- PLL - Prescribed Load List. The amount of parts and supplies authorized to be stored in the unit.
- POMCUS - Prepositioning of materiel configured to unit set. Equipment for CONUS units stored in unit set configurations in Europe. It is anticipated that these units will deploy to Europe under contingency plans without equipment and "fall in" in Europe on this equipment.
- PWRS - Prepositioned War Reserve Stocks. Supplies and equipment located near the point of intended use to support combat consumption requirements pending resupply from CONUS.
- RC - Reserve Components. The Army National Guard and the Army Reserve.
- TAMMS - The Army Maintenance Management System. The equipment records and procedures used for controlling the operation and maintenance of all designated Army materiel.
- TRADOC - Training and Doctrine Command. The major Army command responsible for training, doctrine, and combat development.
- USAARMC - United States Army Armor Center. It includes all the elements of the Army's CONUS community to include the Armor School and Armor Training Center. It is located at Fort Knox, Kentucky.
- URR - Unit Readiness Report. The monthly report originated by battalion size units which reports personnel, logistics, training, and overall readiness.
- WARF - Wartime Replacement Factor. The factor used in determining necessary wartime replacements. It is based upon judgment, experience, and scientifically developed combat consumption rates.

Chapter II

Tank Forces Management Group



DEVELOPMENT

CONTENTS

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In-depth analyses along with further documentation and bibliography are available and are contained in the Development Subsystem Appendix, in TFMG office, Pentagon, Room 1A871

INTRODUCTION

Fundamental to achieving the goal of optimizing the combat capability of the US Army Armor Force is the conduct of a highly effective tank development program. Such a program has as its objective the equipping of Armor units with the best available tank in sufficient numbers to ensure

Tank Development **OBJECTIVES**

- MAINTAIN SCIENCE & TECHNOLOGY BASE
- BALANCE CAPABILITY VS THREAT
- DEVELOP AFFORDABLE / SUPPORTABLE SYSTEM
- PRODUCT IMPROVE SYSTEM TO SUSTAIN EFFECTIVENESS

Figure D-1

supportable. Finally, over the life cycle of the tank, active Product Improvement (PI) programs sustain the qualitative superiority of the weapons system.

Presented here is an assessment of the current development system's capability to achieve these tank program objectives. The high level of detail employed in describing the tank development system is essential to the understanding of subsequent findings.

mission accomplishment. That objective translates into four primary tasks (fig. D-1). Full advantage must be taken of the opportunities provided by a strong Science and Technology (ST) Base to ensure qualitative advantages in new tank development. Adequate tank capability must be developed both in terms of superior quality and in quantities provided by a fully utilized production capacity to counter all threats. The total system approach to development, manifested in the establishment and execution of Integrated Logistic Support (ILS) plans, ensures that new tanks are fully

SYSTEM DESCRIPTION

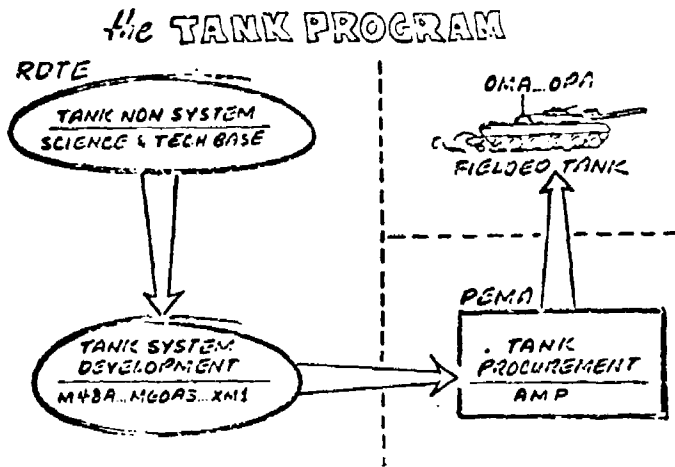


Figure D-2

The tank development program has two major components: the ST Base and System Development programs (fig. D-2). The ST Base includes programs funded in categories 6.1 (Research), 6.2 (Exploratory Development) and 6.3a (Nonsystem Advanced Development). Formal programs like the M60A3 and XM1 are a part of the tank system development structure. System development is based largely on the technology demonstrated in ST Base programs. Both the ST Base and system development programs are supported with Research Development Test and Evaluation (RDTE) funds. When a tank is fully developed, it is procured in the Army Materiel

Program (AMP). Both procurement and RDTE funds are allocated to tank programs by the Research Development Acquisition Committee (RDAC) in the Planning, Programming and Budgeting System (PPBS). Finally, the fielded tank is operated and supported for the remainder of its life cycle. Discussion here centers on tank development with a brief review provided of the procurement process. The system supporting a fielded tank is addressed in the Logistics Chapter.

TANK SCIENCE AND TECHNOLOGY BASE

The objective of ST Base tank programs is to discover new solutions to problems which restrict the Army's mission performance. The description of the current Tank ST system focuses on the organizational structure supporting those programs.

Structure

The US Army Materiel Development and Readiness Command (DARCOM) is the primary agency responsible for conducting tank ST programs. DARCOM is actively assisted in the accomplishment of this task by the Defense Advanced Research Projects Agency (DARPA). DARPA, through its Combat Vehicle Technology Programs, initiates and eventually hands off to the Army ST Base programs designed to explore promising new system concepts. In this manner DARPA has made a major contribution to the current state of tank technology. Within DARCOM an organizational structure of

TANK SCIENCE & TECH BASE STRUCTURE DARCOM R&D

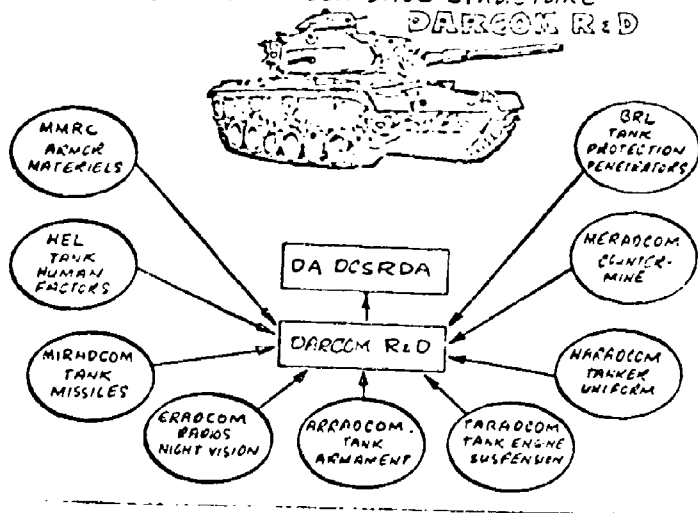


Figure D-3

Tank Development... DCSRDA STRUCTURE

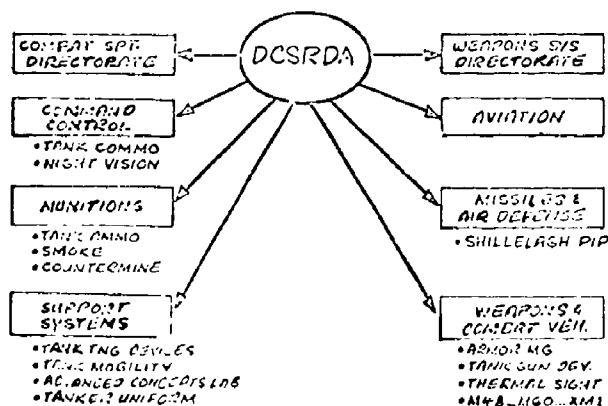


Figure D-4

Research and Development (RD) Commands and Laboratories conducts ST Base programs on a commodity oriented basis (fig. D-3). Each of these agencies plans, programs and conducts research only in its area of expertise. This means that for a complex system like a tank, virtually every DARCOM agency is involved in the ST program. There is no organization within DARCOM which integrates the efforts of participating ST Base agencies into a single, coordinated tank development plan. This tank ST Base management deficiency is exacerbated by an analogous structural problem at Department of the Army (DA) level. The Deputy Chief of Staff for Research, Development and Acquisition (DCSRDA) has DA Staff responsibility for tank development. Within DCSRDA, responsibility for tank ST BASE programs is split between two hardware directorates (Combat Support Systems, Weapons Systems) (fig. D-4). Within each directorate the tank program is further fragmented among a number of divisions. Similar to the DARCOM structure, there is no focal point for tank development in DCSRDA. The same situation exists in the Office, Deputy Chief of Staff for Operations and Plans (DCSOPS), the DA Staff agency responsible for establishing tank program priorities. The tank ST Base is fragmented at all levels with no central, controlling agencies identified to plan and integrate a comprehensive overall program.

Science and Technology Base Program Development

Central to the development of tank ST Base programs is the combat developer/materiel developer interface (fig. D-5). The function of the combat developer, as the user representative, is to transmit guidance to the

materiel developer (DARCOM) in the form of a priority listing of requirements. The tank combat development agency is the US Army Armor Center (USAARMC). Currently, the Science and Technology Objectives Guide (STOG) and the Armor Development Plan (ADP) are the publications used to transmit user guidance to the DARCOM community. The STOG, published by DCSRDA, is a document containing broad guidance on all Army development interests. The ADP, published annually by USAARMC as an unofficial document, deals only with tank development and offers a detailed assessment of capability deficiencies that must be addressed by future ST Base programs. The DARCOM RD Commands and independent laboratories use the STOG, and to a lesser degree the ADP, as guides during program formulation. Guidance is also provided by the Director, Defense Research and Engineering (DDRE),

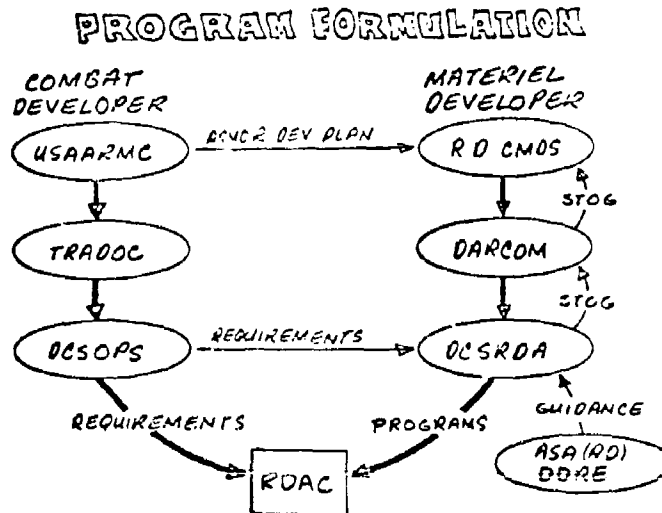


Figure D-5

Office of the Secretary of Defense (OSD) and the Assistant Secretary of the Army for Research and Development (ASA(RD)). Proposed programs are forwarded through DARCOM and DCSRDA to the RDAC for consideration in the PPBS process. If resources are allocated for a program, funds are allotted to the appropriate DARCOM agencies for project execution.

TANK SYSTEM DEVELOPMENT

The tank system development process refers to the application of the materiel acquisition system to the development of tanks. The XM1 program is an example of tank system development. In contrast to the description of the ST Base which focused on identifying participating organizations, the description of the tank development system will orient on the materiel acquisition process and associate organizations with that process.

HOW THE TANK DEVELOPMENT SYSTEM WORKS

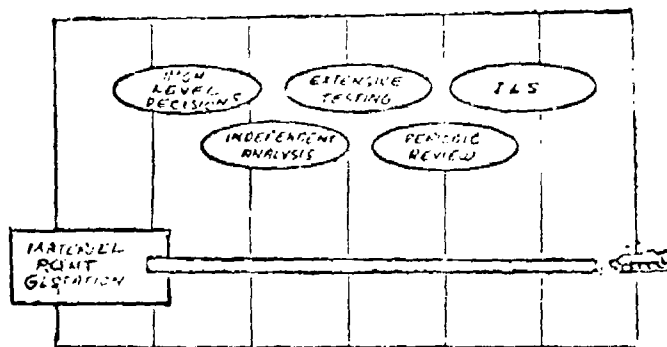


Figure D-6

System Characteristics

The tank development system is best described by highlighting five of its key characteristics: high level decisions, independent analysis, extensive testing, periodic review, and Integrated Logistic Support (ILS) planning. Each of these characteristics (fig. D-6) impacts heavily on the ability of the system to develop an affordable, supportable tank in a reasonable time frame.

LEVELS OF DECISION

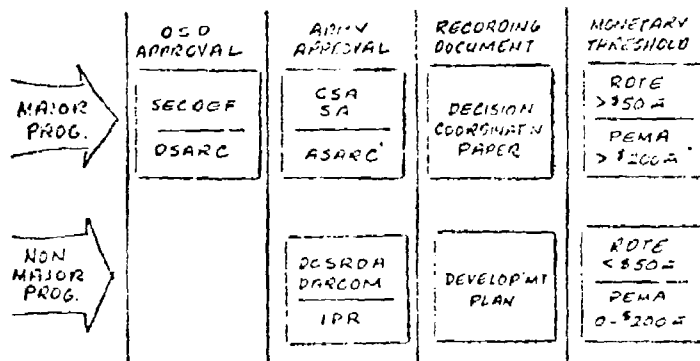


Figure D-7

Levels of Decision

Current materiel acquisition policies differentiate between major and nonmajor systems primarily on a funding threshold basis (fig. D-7). Because of high program costs, tanks are invariably classified as major systems. The Defense Systems Acquisition Review Council (DSARC) and the Army Systems Acquisition Review Council (ASARC) provide the forum in which senior officials review development issues and make key decisions on a periodic basis. Those issues are communicated by Army Tank Program Managers (PM) in a Decision Coordinating Paper (DCP).

MATERIEL ACQUISITION ANALYSIS

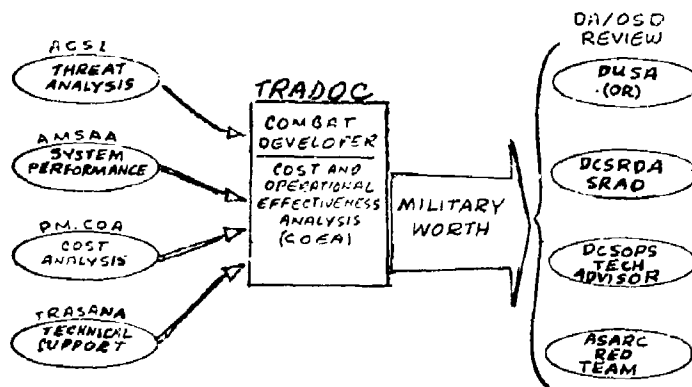


Figure D-8

Analysis

A number of agencies and staff elements take part in the accomplishment of analysis requirements in the tank development process (fig. D-8). While the primary analysis tool, the Cost and Operational Effectiveness Analysis (COEA), is a Training and Doctrine Command (TRADOC) product, both DARCOM and DA actively participate in the conduct of that study. COEA findings are reviewed by DA and OSD. In the case of a high level interest program like the XM1, the COEA results are also evaluated by the General Accounting Office (GAO).

Testing

A mandatory preproduction test program ensures that new tank systems are evaluated under both engineering and operational conditions prior to each program decision point (fig. D-9). The Operational Test and Evaluation Agency (OTEA) conducts all major system Operational Testing (OT) on an independent basis and reports results directly to the ASARC. Development Testing (DT) is conducted by the Test and Evaluation Command (TECOM) for the Tank PM. In addition to DT and OT, TRADOC and OTEA conduct an active Force Development Test and Experimentation (FDIE) program at the TRADOC Combat Arms Test Agency (TCATA), the Combat Development Experimentation Center (CDEC), and combat development center test boards.

Participants in the TESTING PROCESS

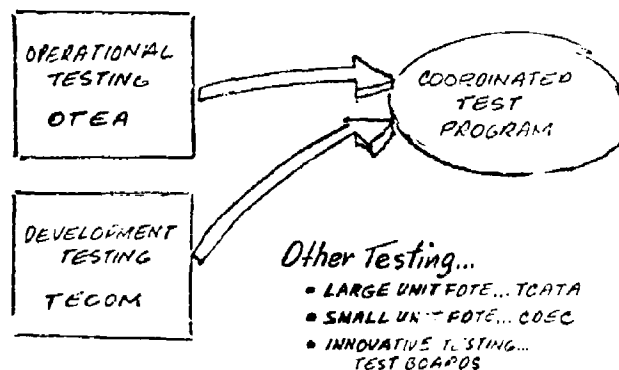


Figure D-9

Integrated Logistic Support

ILS ELEMENTS

- MAINTENANCE PLAN
- SUPPORT and TEST EQUIPMENT
- SUPPLY SUPPORT
- TRANSPORTATION and HANDLING
- TECHNICAL DATA
- FACILITIES
- PERSONNEL and TRAINING
- LOG SUPPORT RESOURCE FUNDS
- LOG SUPPORT MANAGEMENT INFO

Figure D-10

systems fielded with inadequate ILS packages, such as the M60A2, incur significant readiness problems. Therefore, ILS planning is as critical to system operational effectiveness as the development of the tank itself. The coordination of end item and ILS development, the total system approach, is the cornerstone of any successful tank program.

Integrated Logistic Support (ILS) (fig. D-10) includes all elements needed to field and support an end item of hardware. The planning and fielding of the ILS package for a tank along with the end item represents the total system approach to development. ILS is, in fact, an inaccurate title because, in addition to purely logistic considerations, the package includes all training and personnel provisions essential to the fielding of the new system. The importance of adequate ILS planning cannot be overemphasized. Historical evidence indicates that tank

System Overview

OVERVIEW OF THE SYSTEM

FUNCTION DOCUMENT OF RECORD	CONCEPT	VALIDATION	FS&D	LRIP	PRODUCTION
	LOA	LOA	ROC	ROC	ROC
PRIMARY ACTIVITY	CONCEPT EVAL	COMPETITIVE ADVANCED DEVMT	SOLE SOURCE ENGINEERING DEVMT	INDUCTION TUG UP	DEPLOYMENT
PLANNING DOCUMENT	OUTLINE DEV PLAN	DEV PLAN	DEV PLAN	DEV PLAN	DEV PLAN
TESTING		OT I OT I	OT II OT II	OT III OT III	
DECISION	DCSOPS RQMT	ASARC I DSARC I	ASARC II DSARC II	ASARC III DSARC III	ASARC IIIa

Figure D-11

The tank development cycle consists of a basic framework of five sequential phases leading to the deployment of a system (fig. D-11). In cases where development is routine, several of these phases (Validation, Low Rate Initial Production (LRIP)) can be eliminated. ASARC/DSARC reviews are scheduled between phases to allow high level decisionmakers to consider key program issues. As an objective, the time limit from Required Operational Capability (ROC) approval (ASARC/DSARC II) until achievement of Initial Operational Capability (IOC) during the production phase should be no longer than 5 years. Changes pending in the interier acquisition system,

centered around the notion of describing requirements in terms of mission needs, will require procedural changes in early development phases but will not substantially change the current process.

RESOURCE ALLOCATION

The Army Planning Program and Budgeting System (PPBS) provides a process at DA level to allocate resources in support of Army requirements. Both ST Base and tank development programs are funded in the Research Development Test and Evaluation (RDTE) Appropriation. The Director for both the RDTE and procurement appropriations is the DCSRDA. The DCSRDA exercises his PPBS obligations through the RDAC.

RDAC Operations

The function of the RDAC is to establish the RDTE and Procurement programs to support Army Program Objective Memorandum (POM) and Budget submissions. RDAC membership (fig. D-12), includes user representatives (TRADOC, DCSOPS), materiel developers (DARCOM) and DA programmers (DCSRDA, DCSLOG). The RDAC meets on a semiannual basis. A series of preliminary reviews is held prior to those meetings at field agencies responsible for RDTE and procurement program development. Those reviews establish a forum for early program discussions between DA and field personnel. Programs proposed by field elements are then further refined by responsible DA elements. Problem areas

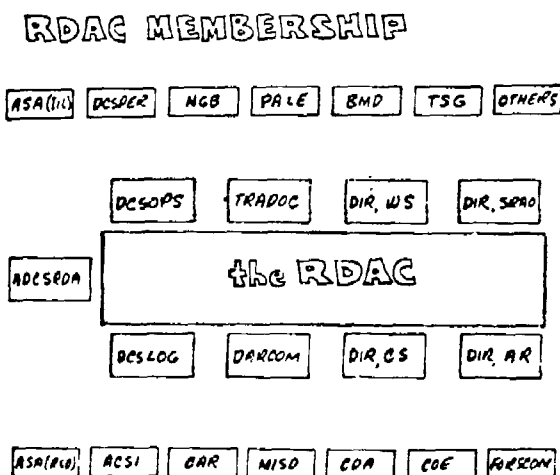


Figure D-12

identified during that process are cited as issues for discussion at the PreRDAC. In all meetings the discussion of program issues is structured by Capability Category (CAPCAT). A CAPCAT is a broad mission area within which systems fulfilling similar or related functions are grouped.

Finalizing the PROGRAM

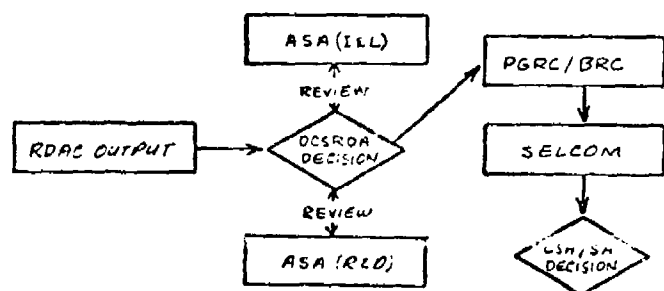


Figure D-13

ASARC/RDAC Interface

Central to the Army Tank Program is that process by which ASARC established resource requirements are accommodated in the annual PPBS process (fig. D-14). ASARC decisions establish program resources requirements as recorded in the Decision Coordinating Paper (DCP). As a part of each ASARC process, the affordability of the system being considered is evaluated in terms of the

new program's impact on total Army requirements and expected assets. On a semiannual basis, the RDAC considers the affordability of all development programs in the context of establishing the RDTE and Procurement Programs/Budgets. Basic program resource requirements, as established by the ASARC in the DCP, are considered in the RDAC allocation process. If the resources provided by the RDAC vary drastically from those required in the DCP, a special ASARC is convened to reconsider the desirability of continuing the program. Thus the RDAC, on a periodic basis, considers ASARC established requirements and allocates resources to programs within the larger context of total Army needs.

TANK RESOURCE ALLOCATION

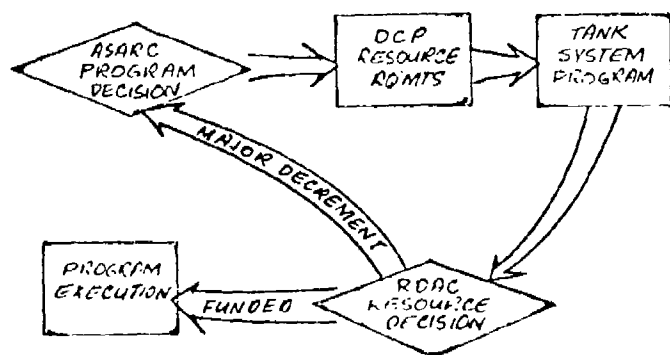


Figure D-14

FINDINGS AND RECOMMENDATIONS

Each phase of the tank development system was evaluated in terms of its capability to satisfy stated program objectives. Findings and recommendations are ranked in terms of their impact on the primary mission of the Army Tank Development Program: equipping Armor units with the best available tank in sufficient numbers to counter the threat.

OVERALL ARMY TANK STRATEGY

1. FINDING: THE ARMY IS CURRENTLY WITHOUT A VIABLE TANK DEVELOPMENT AND PROCUREMENT STRATEGY.

TANK STRATEGY ISSUES

- CURRENT HI-LOW XM1/M60 MIX CONCEPT... OBSOLETE
- M60 SERIES ALREADY OBSOLETE
- EXTENSIVE M60 PI NOT COST EFFECTIVE
- HASC MARK-UP OF FY 78 BUDGET DIRECTS NEW LOOK

Figure D-15

DISCUSSION: The primary objective of the Army Tank Program is to produce the best available tank in sufficient numbers to counter the expected threat. The current Army strategy of producing a low density XM1 fleet to operate with a large M60 population is totally inadequate to satisfy that objective (figure D-15). The M60 series tank, representing largely 1950's technology, is obsolete when compared to the 1980's Soviet threat. The extensive modifications beyond the current M60A3 package required to give the M60 an even marginal qualitative edge over future threat tanks are not cost effective options when compared to procuring the XM1 in larger than currently planned numbers. Therefore, the current strategy of a HI/LOW XM1/M60 tank fleet in the 1980's is no longer viable; the LOW side is

already obsolete. Furthermore, the House Armed Services Committee (HASC) mark-up of the FY 79 Army Budget indicates that the Congress also considers, for the reasons cited above, the current Army Tank Program Strategy to be unacceptable.

RECOMMENDATION: *A comprehensive study of the overall Army Tank Program must be initiated. The study must be completed in time to meet FY 79 Budget submission requirements.*
(Interrelates with similar Training recommendation)

TANK SCIENCE AND TECHNOLOGY BASE

2. FINDING: NO SINGLE AGENCY WITHIN DARCOM IS RESPONSIBLE FOR COORDINATING ALL TANK RELATED ST BASE PROGRAMS.

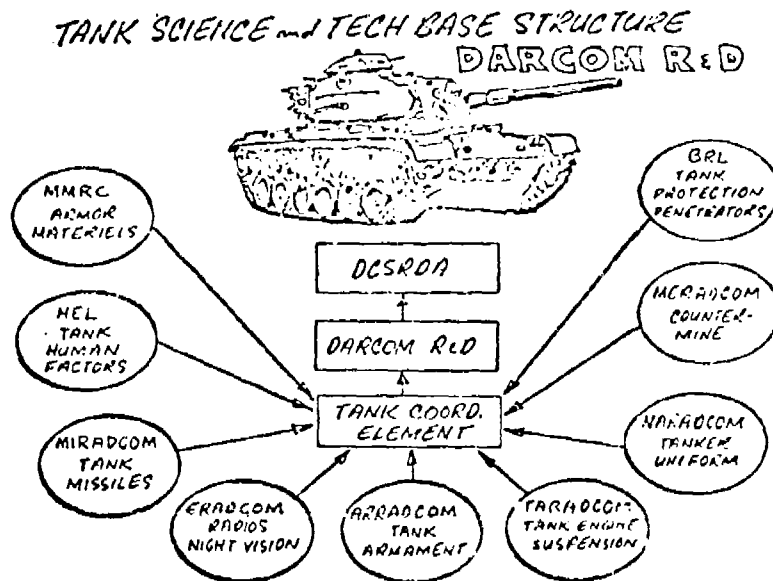


Figure D-16

DISCUSSION: A primary task of the tank development program is the maintenance of a strong ST Base. The current DARCOM Tank ST Base effort is seriously degraded because of a lack of central control and direction. Virtually every RD Command and independent laboratory in DARCOM conducts ST programs that are tank related. This overall research effort is not coordinated by any agency into an integrated development plan. Such a plan is necessary to ensure that the various subsystem technologies required to develop new combat vehicles are demonstrated in compatible time frames.

RECOMMENDATION: DARCOM designate one element to control all tank ST Base programs (fig. D-16).

BEST AVAILABLE COPY

3. FINDING: CURRENT OFFICIAL REQUIREMENTS DOCUMENTS DO NOT ADEQUATELY ESTABLISH USER TANK DEVELOPMENT PRIORITIES.

DISCUSSION: In order to adequately guide ST Base programs a mechanism must exist to provide detailed user requirements and priorities to materiel developers in a timely manner. Currently, the STOG is the document which provides that link. The STOG, however, contains only broad guidance for tank development because it must provide requirements for all programs across-the-board. The Armor Development Plan (ADP), published by the Armor Center, provides extensive guidance on user tank requirements (fig. D-17) and is the ideal link between the combat and materiel developer communities. However, the ADP is not distributed as an official document because higher headquarters staffing requirements cannot be accomplished in a timely manner. An official ADP, published annually, would provide the forum necessary to adequately guide the ST Base.

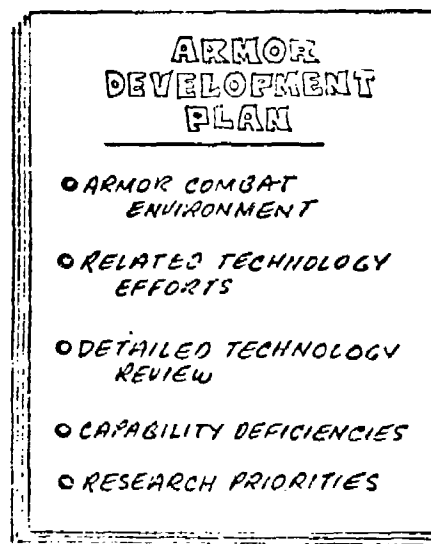


Figure D-17

RECOMMENDATION: Authority to publish the ADP as an official document should be delegated to the CG, USAARMC.

DA ORGANIZATION

4. FINDING: DCSRDA CONTROL OF TANK PROGRAMS IS FRAGMENTED.

DISCUSSION: The effective control and management of tank related programs in DCSRDA can only be achieved if those programs are directed by a single, adequately staffed element. Currently, tank ST Base programs are managed by elements of the two DCSRDA hardware directorates. Tank system programs are managed by the Armor Team, Weapon and Combat Vehicle Division, Weapon System Directorate. Thus, control of tank related programs is badly fragmented. Further, analysis of the FY 78 Budget indicates that the Armor Team is significantly understaffed in comparison to other Weapon System Directorate elements (fig. D-18). If the number of RDTE Projects and Procurement lines managed per officer is used as a measure of work load, the Armor Team carries a management burden which is 56% heavier than other Directorate elements. Clearly, if the current tank management structure in DCSRDA is to be improved, consolidation of program control and staffing issues must be addressed.

Armor Team STAFFING

ELEMENT	PROJ/ OFFICER	RELATIVE WORKLOAD
MISSILES and AIR DEFENSE DIV	2.4	1.00
AVIATION DIV	3.1	1.29
WEAPONS & COMBAT VEH DIV	3.5	1.46
ARMOR TEAM	3.75	1.56

Figure D-18

RECOMMENDATION: Centralize the DCSRDA management of all tank related programs, including training devices, in a single, adequately staffed controlling element.

INTEGRATED LOGISTIC SUPPORT (ILS)

Total system development, the concept of building a tank and all of its support items as a single package, is the cornerstone of any successful weapon program. Tank development, in contrast to this concept, is highly end item oriented. This condition is characterized by an across-the-board failure of responsible agencies to execute ILS planning and review requirements (fig. D-19). While problems with Readiness Command, DARCOM and TRADOC support of ILS requirements have largely been corrected, potential problems still exist at PM and DA level.

TANK ILS FINDINGS

- PM'S NOT CONDUCTING DETAILED EARLY PLANNING
- READINESS COMMAND...NOT INVOLVED
- NO DARCOM HQ REVIEW
- TRADOC SUPPORT...UNCOORDINATED
- NO DA ASARC REVIEW

Figure D-19

5. FINDING: THE TERM INTEGRATED LOGISTIC SUPPORT DOES NOT REFLECT THE FULL SCOPE OF ACTIVITIES INCLUDED IN THE ILS PACKAGE.

DISCUSSION: The ILS planning package includes training and personnel considerations as well as traditional logistic issues. The misleading title of this critical package has caused it to be given little attention by non-logistic agencies. The name of the package should be changed to more accurately reflect the contents of the product.

RECOMMENDATION: *The current ILS system should be renamed Integrated System Support.*

6. FINDING: TANK PROJECT MANAGERS (PM) ARE NOT CONDUCTING DETAILED PLANNING EARLY ENOUGH IN THE DEVELOPMENT CYCLE.

DISCUSSION: Tank PM's are delaying the conduct of detailed ILS planning until their programs enter Full Scale Engineering Development (FSED). While this practice is in conflict with the provisions of the DARCOM Supplement to AR 700-127, it is done to avoid the costs of paying more than one contractor for detailed ILS plans. This strategy makes it impossible to develop complete Logistic and Training Support Packages for OT II. This forces the PM to either extend FSED and conduct an OT IIa or enter a Low Rate Initial Production (LRIP) phase and run an OT III. Either option delays a full production decision, an expensive proposition. Thus, the front end cost savings achieved by delaying ILS planning are lost when the effects of that strategy cause production delays later in the program. Moreover, the planning delay strategy makes the accomplishment of many parts of the ILS package a high risk effort.

RECOMMENDATION: *Tank PM's must comply with the ILS planning requirements of the DARCOM Supplement to AR 700-127.*

7. FINDING: RESPONSIBLE DA STAFF AGENCIES ARE NOT REVIEWING ILS PLANS PRIOR TO PROGRAM MILESTONES.

DISCUSSION: DA Staff elements are required to review the status of ILS plans before each program milestone. To date, those plans have not been adequately reviewed for tank programs, and ILS has been given inadequate consideration in the ASARC process. In view of the Army's consistent record of failure in tank ILS planning, as evidenced by earlier tank programs, it is imperative that the results of a detailed ILS review by DA Staff elements be a key element in all ASARC deliberations. Moreover, the DCSLOG, who has DA Staff responsibility for ILS, must ensure that those issues are given adequate consideration in all program decisions.

RECOMMENDATION: *The results of a DA Staff review of ILS planning must be a mandatory ASARC agenda item. The DCSLOG should be made a regular member of the ASARC.*

TANK TRAINING DEVICES

8. FINDING: THE TANK TRAINING DEVICES (TTD) PROGRAM IS UNCOORDINATED.

ARMOR TRAINING DEVICES

<u>TYPES</u>	<u>NUMBER DEVICES</u>	<u>AGENCIES INVOLVED</u>
TANK GUNNERY.....	9	USARMC
		TRADER
TACTICAL SIMULATION...II		PM TRADE
		MICOM
NONSYSTEM DEVICES... 14		ARRADCOM
		ARMCOM
SYSTEM DEVICES... 10		PM-MGO
		PM-XMI
		TASO
		CA
		<u>10</u>
	<u>TOTAL 44</u>	

Figure D-20

DISCUSSION: The development of effective TTD to support training on the end item tank is critical to achieving the objective of total weapon system development. Tank PM's are responsible to develop TTD for their systems as an integral part of the overall program. In actuality, much of that responsibility has been delegated to PM Training Devices (PM TRADE). In addition to the split of responsibility for system TTD, other types of TTD (gunnery, tactical, non-system) are managed by a large number of different agencies. This fragmentation of TTD program responsibility, coupled with the fact that TRADOC has not provided timely requirements information, has led to a breakdown in the capability of DARCOM to field TTD systems. Intensive management of TTD programs is required to correct this critical problem.

RECOMMENDATION: Establish a Product Manager for Tank Training Devices.
(Interrelates with similar Training recommendation)

AFFORDABILITY ANALYSIS

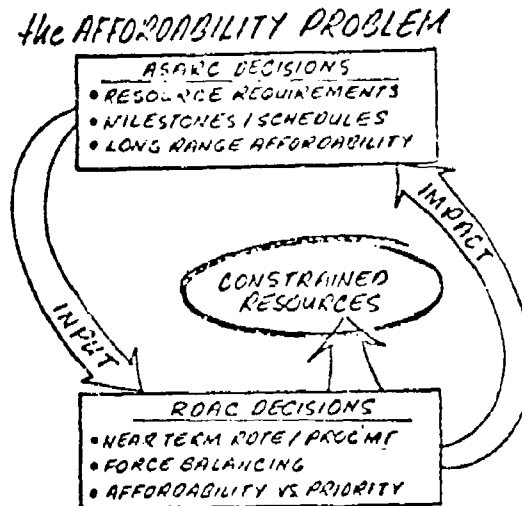


Figure D- 21

10. FINDING: AFFORDABILITY REVIEWS OF DEVELOPMENT PROGRAMS DO NOT ACCURATELY PROJECT THE RESOURCE IMPACT OF THE NEW SYSTEM.

DISCUSSION: There exists a need to upgrade the Army's capability to conduct affordability reviews in support of both ASARC and RDAC decision processes. In the ASARC process, the resource impact of the program being considered on appropriations other than RDTE and Procurement is not measured with any real precision. For a tank system, where 20% of the life cycle cost is Operation and Support, this means that decision-makers are not being provided with accurate long range resource impact information. ASARC decisions are input to the RDAC process where program balancing is a key concern. Within the context of the RDTE and Procurement Appropriations, the RDAC is faced with a similar problem in estimating relatively short term requirements in a resource constrained environment. If, for example, training development costs are underestimated in the original ASARC affordability analysis and the RDAC cannot make up the difference, the program may have to be slipped. In its new time schedule the ASARC may decide that the program is no longer a desirable effort. Thus the affordability analyses supporting both the ASARC and RDAC are critical to the decisionmaking process and must be improved.

RECOMMENDATION: *The approved plan to establish an Affordability Analysis System should be monitored to ensure the adequacy of its implementation.*

SUMMARY

Tank Science and Technology (ST) Base

Fragmented control of the Tank ST Base prevents the realization of maximum effectiveness from the critical resource (fig. 22). Consolidation of control through the fixing of management responsibility for tank ST Base

programs is necessary at both DARCOM and DA. A strong ST Base, indispensable to the Army Tank Program, cannot be achieved until organizational deficiencies cited here are corrected.

MAJOR FINDINGS

Science and Tech Base...

- *FRAGMENTED... UNCOORDINATED*

Tank System Development...

- *END ITEM ORIENTED...*
- *LOW ILS INTEREST*

Tank PPBS...

- *OUTDATED TANK STRATEGY*

System Development

The tank development process is not conducted on a total system basis. The process is end item oriented with little emphasis afforded ILS consideration. In view of the fact that over the life cycle of the system ILS is as critical to tank effectiveness as end item design, the lack of a total system approach to development is a critical deficiency. Without a complete revitalization of the ILS planning system, the Army will continue to fail in its attempts to field systems that achieve their potential combat effectiveness.

Figure D- 22

Tank Resource Allocation

The current Army Tank Program will not achieve its primary mission of fielding the best available tank in sufficient numbers in a timely fashion to meet the threat. The strategy upon which the program is based is obsolete. That strategy, based upon a HIGH/LOW XM1/M60 tank fleet, fails to recognize the fact that the M60 tank will be obsolete before the strategy can be executed. A comprehensive review of this issue should be initiated.

Summary

Serious deficiencies exist in the ability of the current tank development system to meet any of its stated objectives. Implementation of the recommendations offered here would allow the Army to capture the full effect of technological opportunities in fielding total tank weapon systems in sufficient numbers to maximize overall combat potential.

DEFINITIONS

ACRONYMS

- ADP - Armor Development Plan. A plan published annually by the USAARMC which establishes guidance and priorities for future armor materiel development projects.
- AMP - Army Materiel Plan. A planning document which integrates elements of procurement data. Prepared semi-annually by DARCOM.
- ARRADCOM - US Army Armament Research and Development Command. A DARCOM command primarily responsible for all armament research and development programs.
- ASARC - Army Systems Acquisition Review Council. The forum for substantive review and determination of the status of Army major materiel development programs.
- ASA(RD) - Assistant Secretary of the Army for Research and Development. The member of the Army Secretariat specifically responsible for the Army's Research and Development effort.
- BRC - Budget Review Committee. The committee responsible to ensure the proposed Army Budget adequately implements approved plans and programs.
- CAPCAT - Capability Category. A mission area within which programs with the same generic functions are grouped.
- CDEC - US Army Combat Development Experimentation Command. A TRADOC command responsible for small scale Force Development Testing and Evaluation.
- COEA - Cost and Operational Effectiveness Analysis. TRADOC study conducted to determine the military worth of a new system relative to existing capabilities.
- DA - Department of the Army. The executive part of the Department of the Army at the seat of government.
- DARCOM - US Army Materiel Readiness and Development Command. Major DA subordinate command responsible for the readiness and development of materiel.
- DARPA - Defense Advanced Research Projects Agency. An agency under the staff supervision of the Director of Defense Research and Engineering which conducts basic and applied research and development for designated advanced projects.

ACRONYMS

- DCP - Decision Coordinating Paper. An OSD acquisition decision recording document which presents rationale for starting, continuing, reorienting or stopping a selected program at each critical milestone in the development process.
- DCSLOG - Deputy Chief of Staff for Logistics. The officer charged with DA Staff responsibility for the management of DA logistical activities.
- DCSOPS - Deputy Chief of Staff for Operations and Plans. The officer charged with DA Staff responsibility for strategy formulation, overall force development, establishment of requirements and priorities and the utilization of Army forces.
- DCSRDA - Deputy Chief of Staff for Research, Development, and Acquisition. The officer charged with DA Staff responsibility for the research, development, test and evaluation, and the planning, programming and budgeting for the acquisition of materiel obtained from the five procurement appropriations of the Army.
- DDRE - Director, Defense Research and Engineering. Individual responsible to the Secretary of Defense for the conduct of all research and development activities for the Department of Defense.
- DSARC - Defense Systems Acquisition Review Council. An advisory body to the Secretary of Defense on the acquisition of major defense system programs and related policies.
- DT - Development Test. Testing of materiel systems conducted by the materiel developer to demonstrate that design risks have been minimized, engineering development is complete, and that systems will meet specifications.
- FDTE - Force Development Testing and Experimentation. Tests conducted to evaluate new concepts of tactics, doctrine, organization, and new items of materiel.
- FSED - Full Scale Engineering Development. A development phase in which a system, including all items necessary for its support, is fully developed and engineered.
- GAO - General Accounting Office. Investigative agency of the Congress of the United States.

ACRONYMS

- HASC - House Armed Services Committee. A committee of the House of Representatives responsible to formulate and review legislation dealing with the Armed Services.
- ILS - Integrated Logistic Support. The process through which logistic considerations are integrated into the weapons design effort and all elements of the logistic support system are planned, acquired, tested and deployed.
- IOC - Initial Operational Capability. The first attainment of the capability by an MTOE unit to employ effectively a production item or system.
- LOGCAP - Logistic Command Assessment Project. A DARCOM review system designed to evaluate the status of ILS planning in a development program.
- LOGCEN - US Army Logistic Center. A TRADOC command responsible for the development of logistic concepts and doctrine.
- LRIP - Low Rate Initial Production. A development phase in which a low production rate is maintained to reduce the Government's exposure to large retrofit problems while still providing adequate numbers of hard-tooled production items for final tests.
- OSD - Office of the Secretary of Defense. A staff designed to advise and assist the Secretary in the overall operation of the Department.
- OT - Operational Test. Testing and evaluation which is accomplished with typical user operators, crews or units in as realistic an operational environment as possible to measure the military utility of materiel systems.
- OTEA - US Army Operational Test and Evaluation Agency. An agency responsible for supporting the materiel acquisition and force development processes by exercising responsibility for all operational testing and by managing FDTE, and joint user testing for the Army.
- PGRC - Program Guidance Review Committee. A committee that assists in the preparation of the Program Objective Memorandum (POM) by developing proposed program guidance, reviewing and analyzing Army programming actions and making recommendations to the SELCOM.
- PI - Product Improvement. The configuration changes or modification of an item of materiel to improve safety, enhance operational capability, increase availability or reduce costs.

ACRONYMS

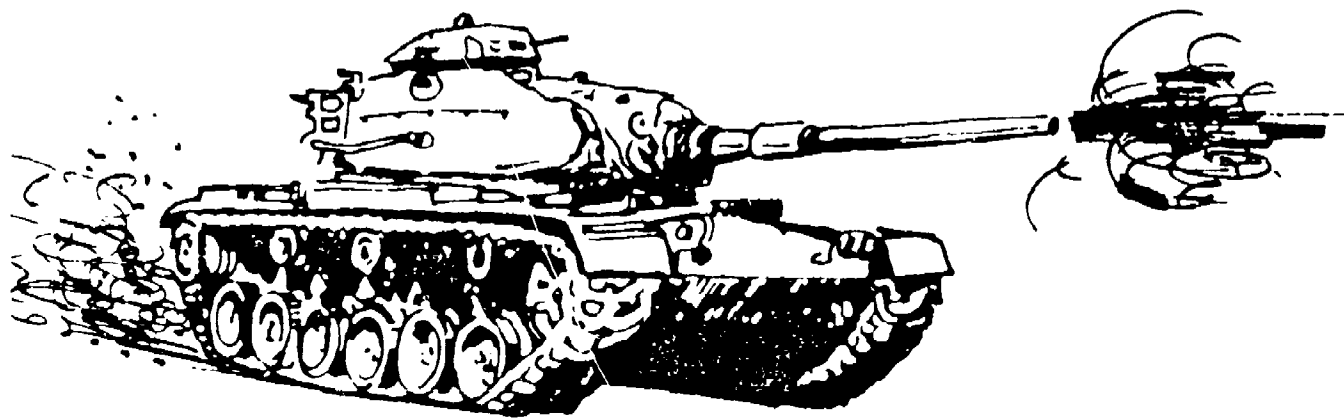
- PM - Project Manager. An officer charged with the responsibility of developing, procuring, producing, and supporting his system in accordance with his charter.
- PM TRADE - Project Manager, Training Devices. A PM whose primary function is the development of nonsystem training devices.
- POM - Program Objective Memorandum. A document which formally transmits to OSD the Army's proposals for resource allocation in consonance with established program guidance.
- PPBS - Planning, Programing and Budgeting System. A system used to articulate the strategy; size, structure and equip the force; set programing priorities; allocate resources; and ensure readiness of the total force.
- RD - Research and Development. The process by which the objective of the timely development of weapons, equipment and systems to meet Army requirements is achieved.
- RDAC - Research Development and Acquisition Committee. A committee which provides advice and recommendations to the DCSRDA in carrying out his materiel acquisition responsibilities, particularly the development of a material acquisition program.
- RDTE - Research, Development, Test and Evaluation. The process by which new ideas for weapons, equipment, and systems are fully developed, tested, and evaluated.
- ROC - Required Operational Capability. A document which states concisely the minimum essential operational, technical, logistical, and cost information necessary to initiate full-scale development or procurement of a materiel system.
- SELCOM - Select Committee. A committee established to review, coordinate, integrate, act, and where appropriate, make recommendations to the CSA/SA on all matters pertaining to programing, budgeting, and major policy.
- SI - Systems Integration. The process by which the functions of complex subsystems are combined to optimize the effectiveness of the complete system.
- ST - Science and Technology. That portion of the Army RDTE program dealing with research, exploratory development and non-systems advanced development.

ACRONYMS

- STOG - Science and Technology Objectives Guide. A document published annually by the DCSRDA which establishes ST Base program objectives and priorities for materiel developers.
- TARADCOM - US Army Tank Automotive Research and Development Command. A DARCOM command established to conduct research and development for the Army's worldwide vehicle program.
- TARCOM - US Army Tank Automotive Readiness Command. A DARCOM command responsible for the readiness of all Army vehicles.
- TCATA - US Army TRADOC Combined Arms Test Board. A TRADOC command whose primary mission is to conduct large scale Force Development Test and Experimentation projects.
- TECOM - US Army Test and Evaluation Command. A DARCOM command responsible for all Development Testing in support of materiel system programs.
- TRADOC - US Army Training and Doctrine Command. A major command established to develop and manage programs to train the Army, function as the Army's primary combat developer, and command organizations and installations as directed by DA.
- TSM - TRADOC System Manager. An officer responsible to coordinate and develop all TRADOC input to major weapon system development programs.
- TTD - Tank Training Device. Any device, classified as either system or non system, which supports tank training through substitution, miniturization or simulation of the actual training task.
- USAARMC - US Army Armor Center. A TRADOC command responsible for all armor related combat and training developments as well as the individual training of all armor related skills.

Chapter VI

Tank Forces Management Group



MANAGEMENT

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In-depth analyses along with further documentation and bibliography are available and are contained in the Management Subsystem Appendix, in TFMG office, Pentagon, Room 1A871.

INTRODUCTION

Military managers are faced with an ever-increasing rate of technological change. This rapid change has frustrated strategic planners and accelerated the rate of equipment obsolescence. Further complicating the management challenge is the realization that within the next 10 years the Army will receive a significant number of totally new weapon systems, the greatest influx since World War II, with a capability for a range of destructiveness not yet seen on any battlefield. These changes have created a demand for better and more effective management methods.

The Army basically uses a functional management concept with emphasis on developing and sustaining combat ready units. With such an orientation, the current management process is not structured to optimize the combat potential of projected systems or of selected systems currently fielded. The Army must decide what management processes should be implemented to ensure the combat effectiveness of these weapons is exploited.

The shortcomings of the current management system are not difficult to see or understand. In fact, they are universally recognized and accepted. The problem currently facing decisionmakers is how to correct these deficiencies or how to exploit the capabilities of modern weapons knowing that these deficiencies exist. Managing by using a weapons systems approach appears to be one technique with great potential.

CURRENT MANAGEMENT STRUCTURE

There are many ways to structure the Army for management purposes. The Army has been traditionally managed by functional areas, such as operations, personnel, logistics, etc. Management personnel are normally divided into staff sections which concentrate on a particular functional area. Each staff element attempts to maximize the effectiveness of its specific functional area. While the impact of this effort on other functional areas is taken into account, it is not an overriding consideration.

The Army also uses other management techniques (fig. M-1). There are geographical groupings to manage overseas commands, project management for selected high cost systems in the development process, and commodity commands for select commodities.

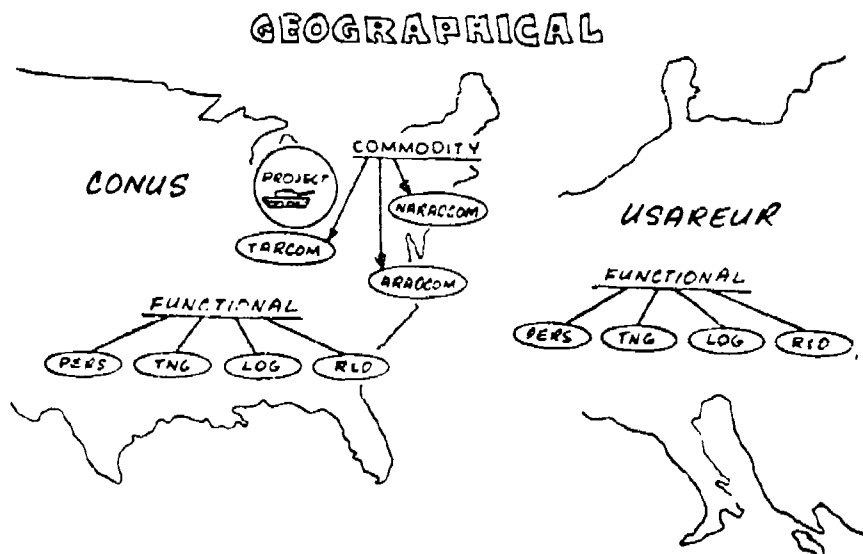
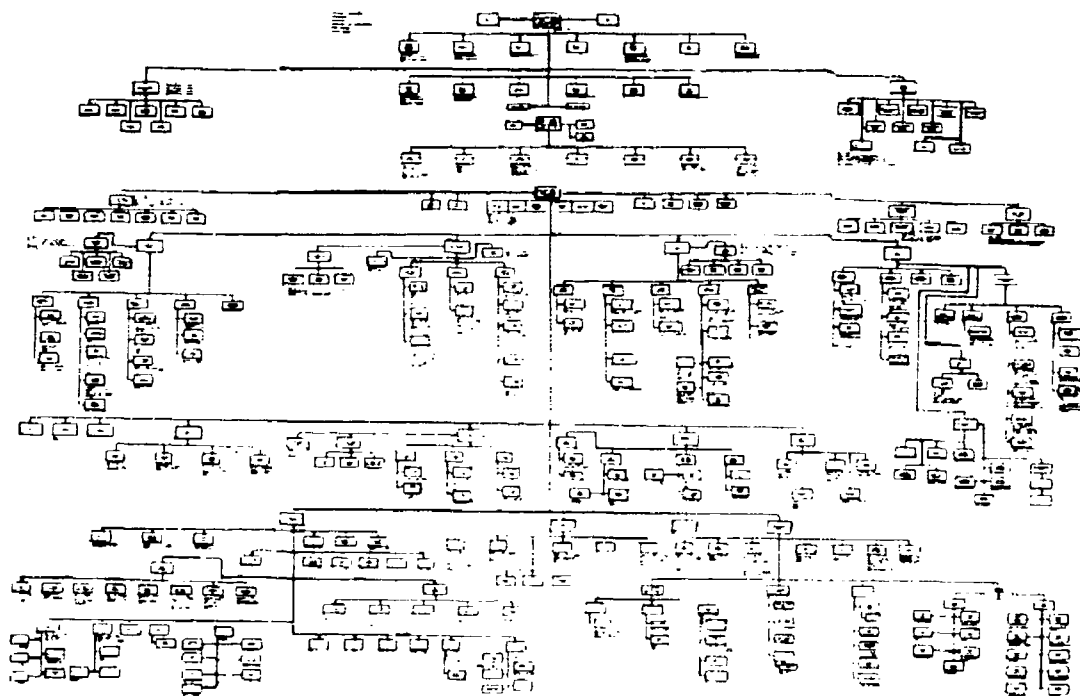


Figure M-1

A major effort was conducted to determine how tank forces are currently managed through the present organizational structure. Fig. M-2 depicts the results of this effort and indicates all the agencies, staffs, offices, and departments currently involved in managing tank forces at MACOM-level and above. Although this version is indecipherable, it clearly demonstrates the difficulty in trying to coordinate all the activities necessary to focus attention on a tank-related problem through extensive bureaucratic layers. Understanding how to approach a problem in a timely manner, in the current complex structure, is about as clearly defined as is figure M-2. The problem facing decisionmakers today is how to work their way through this maze to rapidly focus attention on issues and formulate decisions in a timely manner. This is often a time-consuming task.



VI-4

BEST AVAILABLE COPY

This complex structure has evolved through years of trial and error and numerous reorganizations with the fixed goal of providing the most combat-ready force possible with the resources provided. To a degree, these efforts have been successful. Personnel do arrive in units, training is conducted, maintenance is performed, and spare parts are issued in response to requisitions. These activities, however, are substantially less than 100 percent effective due to the limited ability of the system to focus on specific weapon systems in accordance with their battlefield importance.

In the review of the current management process, 84 deficiencies were identified that adversely impact upon the tank system. Ninety percent of these deficiencies require resolution at major command and above. Only 10 percent require resolution below MACOM-level (fig. M-3).

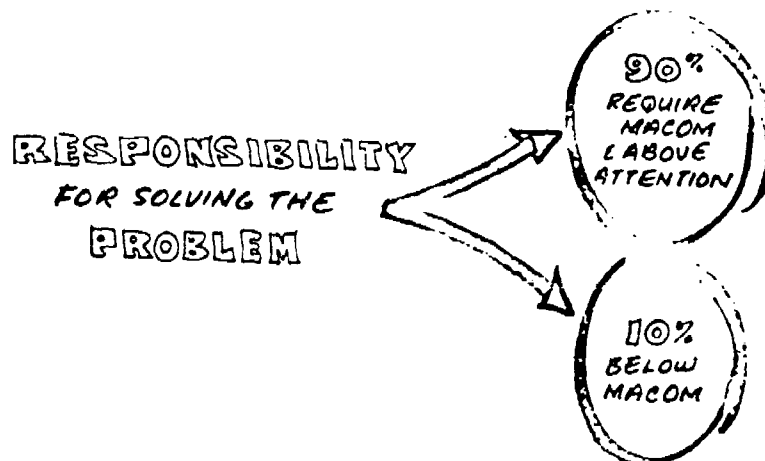


Figure M-3

WEAPON SYSTEM

Since relatively few weapons will dominate future battlefields, it is important to better define what is meant by a total weapon system. The terms "weapon" and "weapon system" are used interchangeably in the context of referring to a piece of hardware. Yet, a weapon system is more than a piece of hardware (the end-product); it is a total system.

A weapon system is an aggregation of the weapon with other input of personnel, logistics, training, tactics, and management. This input is united in a synergistic manner to form a total system capable of operating at design capability (fig. M-4). An analysis of a single problem, personnel turbulence, will be used to demonstrate the total system concept.

WEAPON SYSTEM

- MORE THAN PIECE OF HARDWARE
- AGGREGATION OF INPUTS
- CHARACTERIZED BY INTENSE INTERACTION
- CAPABLE OF DESIGN PERFORMANCE

Figure M-4

A CASE STUDY

An analysis of the situation reveals that turbulence is not a precise definition of the problem. The Army's individual replacement system in fact institutionalizes turbulence during peacetime. During war, combat losses add to this turbulence. Thus, some amount of turbulence is unavoidable in peace and war. The problem, then, is not elimination of turbulence but in finding ways to reduce its degrading effects, with the ultimate goal of maximum combat readiness.

Most previous solutions offered to counter turbulence have been directed toward making the personnel subsystem more efficient, resulting in repeated iterations at improving process efficiency but not truly solving the problem (fig. M-5).

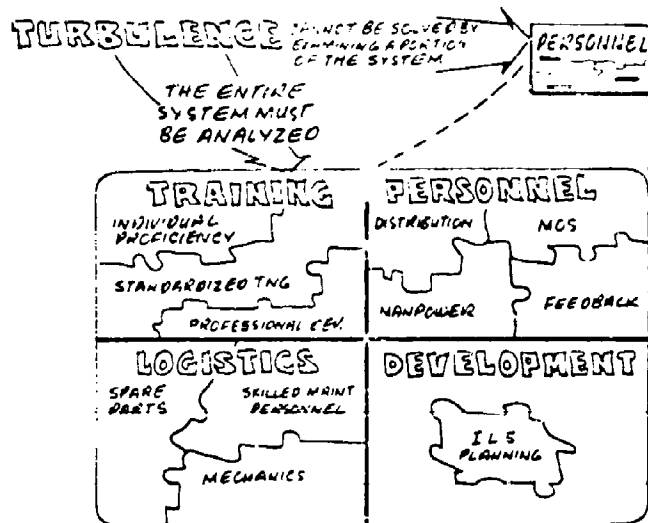


Figure M-5

The percentage of turbulence is even measured in some unit readiness reports and usually thought to be the sole province of personnel managers. The result has been frustration in the field and a feeling of inadequacy in process-oriented management that wants to help but has been in effect unable to do so.

For purpose of analysis, tank functional subsystems were analyzed separately, yet individual recommendations that resulted from these analyses must interact in

harmony and in a timely manner to effect a total solution. It is not the individual subsystem solutions that are important; it is the result obtained by the synergistic effect of their common focus.

Several training initiatives are recommended to minimize the adverse effects of turbulence (fig. M-6).

TRAINING INPUT

- RAISE ENTRY LEVEL TECHNICAL PROFICIENCY
- PROVIDE PROFESSIONAL DEVELOPMENT ON DISCRETE SYSTEMS
- STANDARDIZE UNIT TRAINING

Figure M-6

Raising individual technical proficiency by systems specific entry level training on a discrete tank frees units from the disruptive practice of taking valuable training time to train individuals to an adequate level of technical competence. Currently that level of disruption is approximately proportionate to the rate of influx of new personnel. For example, an Armor unit might reach a level of unit proficiency that permits realistic combined arms training, only to have the receipt of large numbers of new less-trained individuals require the

return to individual training. Providing professional development training on discrete systems for vehicle commanders and tank system maintenance personnel will produce higher levels of technical proficiency at the supervisory level. In effect, this should reduce the disruption now caused by the loss of technically proficient NCOs and subsequent replacement by those lesser qualified. The technical proficiency of replacements, both entry level soldiers and career, is unknown to commanders and varies widely. Units make up this proficiency fault at the price of turbulence to their training and competence of their unit. Standardization of armor unit training worldwide will facilitate the interchange of soldiers between units and reduce the disruptive effect of replacements not familiar with local concepts at variance with approved doctrine.

These training initiatives were not perceived in isolation and cannot be fully realized without simultaneous efforts in other subsystems. Technically proficient entry level and career soldiers must arrive in units in the correct numbers and grade in a timely manner, and be maintained in their units if the adverse effects of turbulence are to be reduced. A more precise personnel management operation is required (fig. M-7).

PERSONNEL INPUT

- ESTABLISH NEW ARMOR CME
- ELIMINATE LIBERAL GRADE and MOS SUBSTITUTION CRITERIA
- PROVIDE ADDITIONAL CREWMEN
- REPORT BY 4-DIGIT MOS

Figure M-7

Establishing a separate career management field which identifies skills for specific positions on discrete tanks will provide the management precision necessary to capture the full effect of a better trained force. Without the implementation of a more responsive career management field the training initiative described above would suffer. Additionally, the current liberal grade and MOS substitution criteria that now permits an E-6 63H Automotive Repairman to fill an E7, 63C Motor Sergeant position, also need to be tightened. While such liberal rules have in the past given the appearance of process efficiency, in reality they have masked the mismatch of people, skills, and requirements that have long plagued unit commanders and have contributed to internal unit turbulence as shifts are made to correct proficiency shortcomings. Much of the tank crew turbulence now reported is caused by moves within the unit as the commander shifts resources to keep his crews balanced. The provision of additional crewmen to the tank force will reduce this turbulence by providing a buffer between the operational crews and the replacement stream. As a feedback check to ensure systems discipline, there will be a requirement to report armor unit personnel status by 4-digit MOS, thereby surfacing inadequacies to the level of management that can correct the problem.

Yet the combat capability of a better trained force managed with precision will still be eroded by adverse turbulence if long-standing logistics problems are not solved.

The disruptive and turbulent effect of spending valuable training time in maintenance activities caused by inadequacies in the logistics system is well recorded in armor units today. Lack of spare parts, unresponsive technical support channels, and an inadequate number of properly trained mechanics all contribute to the degradation of training plans. The training initiative to provide more technically competent crewmen and maintenance personnel in armor units will prevent many maintenance problems and will correct others. (fig. M-8).

LOGISTICS INPUT

- RAISE ENTRY LEVEL TECHNICAL
PROFICIENCY OF MAINT. PERSONNEL
- SOLVE PLL/ASL PROBLEM
- PROVIDE ADEQUATE MAINT. MANPOWER

Figure M-8

The current PLL/ASL repair parts concept in support of the armor force is not adequate in peacetime and predictably will fail in war. Solving the spare parts problem through an open-ended, intense review will go a long way in reducing the adverse turbulence created by chance availability of armor equipment for training. Co current with a solution to the PLL/ASL problem must be a correction of the inadequacy of current Tables of Organization and Equipment to provide skilled support personnel at armor company/battalion level. While more precise personnel management will assure better utilization of trained personnel, what is needed

is a more realistic base for maintenance manpower authorizations. More adequate numbers of personnel will obviate the necessity of drawing crewmen away from other training to perform tasks better suited to trained maintenance personnel.

While the foregoing is a prescription for correcting management in the current and future fielded tank force, true systems integration must begin in the development process and must be related to the tanks thereafter. Investigation reveals that many of the current inadequacies spring directly from basic management deficiencies in the development process. Failure to correct development problems will perpetuate systems inadequacies and force continuing post development fixes that could have been prevented early during the development process. Past failures in integrated logistics support planning plague the current fielded tank force (fig. M-9).

DEVELOPMENT INPUT

• CORRECT ILS DEFICIENCIES

Figure M-9

Yet, that inadequacy continues in the current development system. Integrated systems support planning is the management device in the development process whereby consideration of personnel, training, and logistics are truly integrated in a systems approach, so that the new system when fielded can immediately perform to its design capability. Excessive end item orientation and

fragmented management in the past have prevented achievement of this goal. Solutions to this problem must be forthcoming and interact with experience gained in systems management of fielded equipment if armor equipment is to achieve its full design capability on the battlefield.

Taken together, these individual solutions in training, personnel, logistics and development will permit a long overdue solution to the adverse effects of turbulence. While not an exhaustive list of recommendations from individual subsystems that impact on this single problem, the foregoing analysis provides an example of the total systems approach so vital to the achievement of full combat potential of the tank force. As highlighted in this case study of solving the turbulence problem, there must be simultaneous action in all areas working together. Solutions in only one or two subsystem areas that are not integrated will only produce another iteration in suboptimizing a process. The proper solution can only be derived using a total systems approach (fig. M-10).

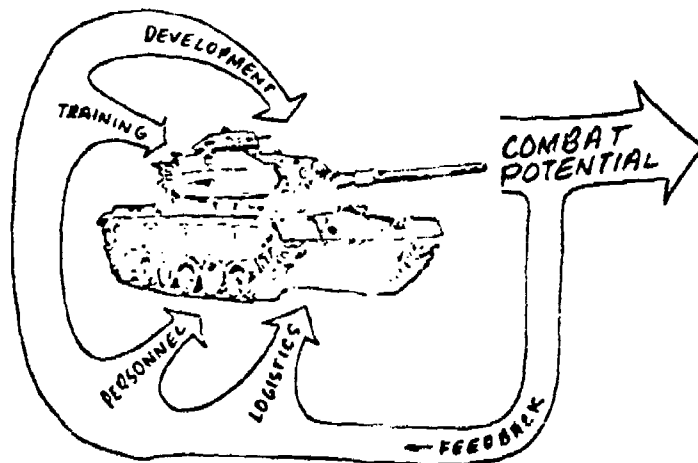


Figure M-10

WEAPON SYSTEM MANAGEMENT

With less complicated weapon systems, it was possible to separate functions and have performance carried out by separate functional agencies; e.g., personnel, logistics. Independent performance measures were stressed for each functional area with less consideration given to total weapon-system performance. However, with highly complex and sophisticated weapon systems, this segregation of functions is not feasible or appropriate. Weapon system management is a management concept that concentrates on the total system and seeks to optimize the performance of the whole system which may or may not optimize performance of individual functions (fig. M-11). It stresses the timely integration of all aspects of a weapon system from the establishment of operational requirements, through weapons design, development, and production, to the training of personnel, logistic support and operations. Weapon system management includes all activities involved from the systems engineering state, to the integration of the physical components of a weapon, to the establishment of an information system between the various functions, the performance of which is necessary for an effective weapon system. It is an

excellent management technique to work through a complex functional structure such as the Army has today in order to focus management attention on a selected weapon system. This management orchestration with an intensive single focus ensures that the weapon system has the potential to operate at peak effectiveness. It also offers some other advantages, namely drawing attention and priority of support to the managed system, and encouraging early identification and resolution of problem areas.

WEAPON SYSTEM MANAGEMENT

- *CONCENTRATES ON TOTAL SYSTEM*
- *INDIVIDUAL FUNCTIONS SUBOPTIMIZED*
- *STRESSES TIMELY INTEGRATION*
- *EMPHASIZES MANAGED SYSTEM*

Figure M-11

But the systems approach is not without its problems. It tends to frustrate the functional staff system, it is expensive, and consequently in the intense competition for resources causes personnel and material to be diverted from systems not intensively managed. There is also a possibility such an approach might create an elitist attitude among those in the managed system. Despite these disadvantages, this systems approach offers the possibility of an increased combat return obtainable in no other way for the resources invested.

Since weapon system management is costly, it should be restricted to those systems that are of critical importance to the Army's primary objective of winning the land battle and whose full capability cannot be realized within the current functional management process. Selection of systems to be managed using a systems approach then becomes critically important.

SELECTION OF WEAPON SYSTEMS

Selecting systems for intensive management is a complex task. Five criteria from a wide range of possibilities were selected (fig. M-12) to assist in deciding whether tank systems should be intensively managed. To first test the applicability of the criteria, five weapon systems crucial to the Army's battlefield success were chosen as candidates. The systems selected were tanks, aviation, antitank, artillery, and air defense. The criteria proved more than adequate. Moreover, the results are significant:

Management Decision **CRITERIA**

- **COMBAT EFFECTIVENESS**
- **RESOURCE CONSUMPTION**
- **COMPLEXITY**
- **LEVERAGE (IMPACT ON OTHER SYS)**
- **EXTERNAL VISIBILITY**

Combat Effectiveness: Tank force provides 36 percent of the corps firepower.

Resource Consumption: If the Army budget were costed against combat forces, the tank portion would equal approximately 20 percent of the total budget.

Figure M-12

Complexity: The tank is a complex system that requires a high degree of special training to operate effectively.

Leverage (impact on other systems): The fact that tanks are large consumers of material resources, provide over one-third the corps firepower, yet involve only a very small percentage of the Army's total manpower as crewmen results in a high degree of leverage compared with other systems.

External Visibility: A high degree of leverage causes external visibility to be great especially in Department of Defense and Congress during the budget process. The tank also enjoys high national and international visibility due to the widely accepted conclusion of its great impact on the modern battlefield.

The tank emerged as the prime candidate for intensive management and the system that fully meets the selected criteria. In addition, the fragile nature of the tank system, or, in other words, its time-sensitivity to the various subsystem input, makes it mandatory for the tank to be managed using such an approach. All system input must be brought together simultaneously to make the tank a combat effective system. From a management standpoint, no other Army system is as fragile.

Although it is anticipated that all systems evaluated and possibly other systems will require management using a systems approach, they will not require the same degree of intensity at the same levels of management. The differences in the levels of intensity can be varied by the strategic placement of system-specific focal points through the current management structure. The more widely spread the focal points, the higher in the current structure, and the more direct access to key decisionmakers, the more intensive a weapon system can be managed. For example, the aviation system and other complex missile systems are currently being managed intensively to different degrees using a weapon-systems approach. Artillery is another weapon system that is not now managed using a system approach, but may require some form of systems management. While not as time-sensitive to subsystem input as the tank system, the criticality of artillery on the modern battlefield is unquestioned.

THE TANK SYSTEM

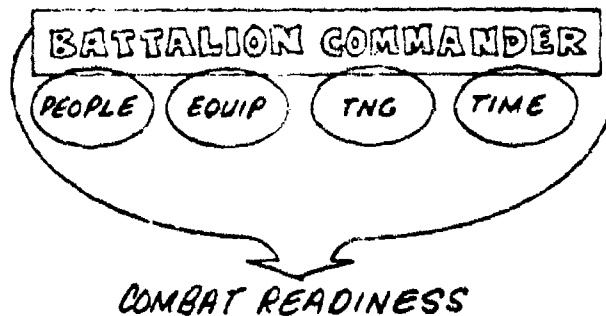


Figure M-13

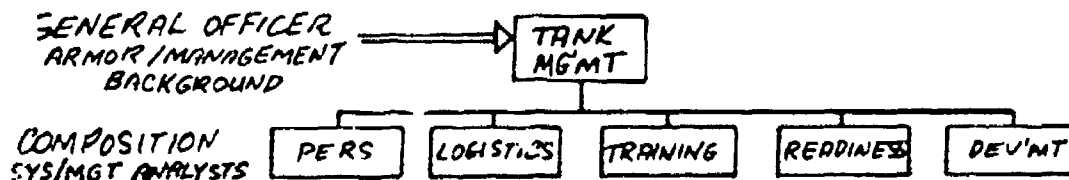
The tank battalion commander is a weapons-system manager (fig. M-13). He is the strongest link in the chain of command who performs system management. The system managed by the battalion commander consists of more than the tank. It is the aggregation of the tank with other input necessary to make the tank perform at its design capability. This input includes the crew, their training, tactical employment, logistics, administrative and management support united on a timely basis and in a synergistic manner to form an effective combat system. This input is melded together by regular interaction to form a total tank system.

Tank battalion commanders in their role of commanders are in fact systems managers and successfully integrate people, equipment, parts, facilities, and training to produce combat-ready units. The effectiveness of their management and leadership is measured in terms of combat readiness and the attainment of the maximum combat potential from the equipment. The frustration these commanders often feel about the inability of the separate subsystems of the current functional general management process--logistics, personnel or training--to cope with problems is caused to a large measure by the difference in management focus. Battalion commanders are weapon system managers. The structure they must interact with above battalion level has no such orientation. What exists above battalion level is an Army-wide management system which is a complex organizational structure which frustrates commanders and frequently impedes timely interaction of its individual parts.

TANK FORCES MANAGEMENT STRUCTURE

Under the systems approach, a special management structure would be added to the current management system. This management process will cut across organizational relationships and also stress the timely integration of all aspects of the tank force including development, personnel, training, logistics, and operations.

Placement: A Tank Forces Management Office (TFMO) should be established at the Chief of Staff, Army level (fig.M-14).



FUNCTION... IDENTIFY-ENERGIZE-ORGANIZE-INTEGRATE-COORDINATE

HOW...

- MANAGEMENT BY EXCEPTION
- WORK THROUGH ARMY GENERAL STAFF
- TANK COORDINATING COMMITTEE

PARTICIPATION...

- RESEARCH DEVELOPMENT ACQUISITION COMMITTEE
- ARMY SYSTEM ACQUISITION REVIEW COMMITTEE
- PROGRAM GUIDANCE REVIEW COMMITTEE
- BUDGET REVIEW COMMITTEE
- SELECT COMMITTEE

Figure M-14

Composition: This office should include a small staff carefully selected for their high level of Department of the Army expertise in personnel, logistics, training, readiness, and development.

Functions: The functions of this element will be to identify tank related problems and serve as energizer, organizer, integrator and coordinator for tank force actions.

How: This will be done by working through the Army General Staff on a management-by-exception basis.

Participation: There is a requirement for the head of the TFMO to participate in the decisionmaking process of the Research, Development, and Acquisition Committee (RDAC), the Program Guidance and Review Committee (PGRC), the Budget Review Committee (BRC), the Army System Acquisition Review Committee (ASARC), and the Select Committee (SELCOM) when these committees consider matters relating to tank programs.

A conceptual system to interface with the Tank Forces Management Office is depicted in fig. M-15 and is described below.

Each of the agencies or elements identified by a face or tank on the chart shows a focal point established to address tank force issues. The focal points are centers of intensive management. They are points of concentration which will be required at each DA General Staff and General Support Agency level. These focal points will also be needed at major support commands to address tank force matters.

Just as there is a project manager for the XM1 tank, there is a need for focal points in DARCOM for tank readiness and tank development. In addition, focal points are needed throughout the DARCOM logistics support system to include the Logistic Assistance Offices down to division level.

The Commander of the Armor Center must be a central participant in any Tank Force management system.

The importance of the Armor Center's role in combat development, training development and maintenance of Tank Force standards and doctrine is recognized and totally supported. Since the Armor Center is the "professional home" for Armor officers and soldiers of the Army, the Center Commander must coordinate and supervise the development and maintenance of standards, worldwide, to guarantee a properly manned, trained, and equipped Tank Force. He is the principal spokesman for the Armor community and in this capacity must serve as the focal point for molding man and machine to optimize combat potential. He must also serve as the interface between combat development, training development, and materiel development. The Armor Center Commander must coordinate on a continuing basis with the TFMO to assure proper assessment of Army and DOD policies and procedures at Army Staff level, which affect the Army's

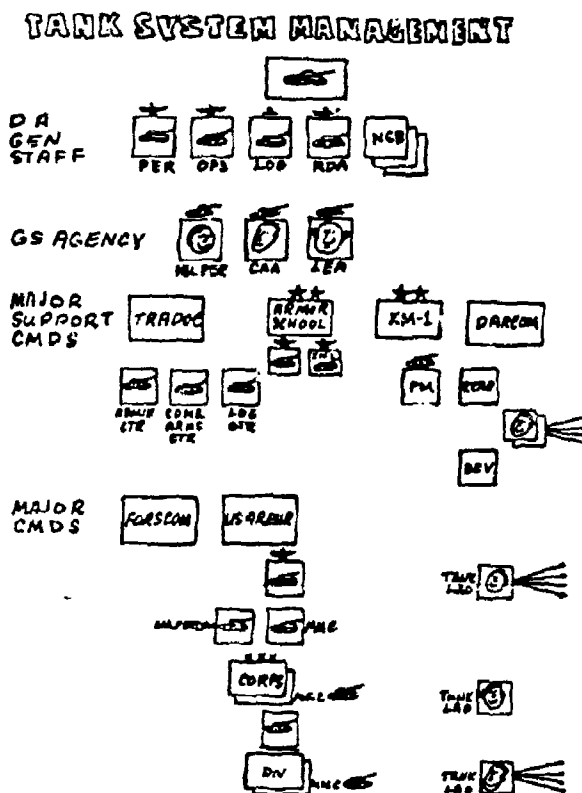


Figure M-15

ability to man, train, equip, field, and maintain an Armor Force. To assist the Center Commander in his functions, there is a need for a focal point at Center level. The size of the office, its function, and location in the Center will be as directed by the Center Commander.

There is a need for the focal points to be established at MACOM and corps level. There is currently a shortage of qualified armor staff officers at these levels.

This conceptual structure is not a separate vertical organization and the focal points do not assume specific assigned functions from existing staff agencies. It works through the existing staff and identifies problems, energizes the staff and assists in coordinating actions of tank-related matters with commanders and managers at various levels.

CONCLUSIONS

Intensive management using a weapon systems approach is essential to realize improvement in the management of tank forces.

A Tank Forces Management Office is necessary at Chief of Staff level.

Focal points for tank forces using a systems approach is needed from DA staff level and at echelons below.

RECOMMENDATIONS

Establish Tank Forces Management Office at Chief of Staff level.

Establish focal points within the General Staff and other agencies using a weapon systems approach.

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) 6 Tank Weapon System Management . . . a program for maximum effectiveness.		5. OF REPORT & PERIOD COVERED 1 Report
7. AUTHOR(s) LTG (Ret) James G. Kalergis		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Headquarters, Department of the Army Office of the Chief of Staff ATTN: DACS-DMT Washington, D.C. 20310		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N/A
11. CONTROLLING OFFICE NAME AND ADDRESS Same as 9.		12. REPORT DATE 11 19 Apr 1977
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Same as 9.		13. NUMBER OF PAGES 140
		15. SECURITY CLASS. (of this report) U
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public releases; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) Same as 16		
18. SUPPLEMENTARY NOTES Recommendations presented to, and approved by CSA May 1977.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) (U) Armor (U) Training (U) Management (U) Maintenance (U) Personnel (U) Tank System (U) Combat Service Support (U) Combat Effectiveness (U) Tactical Warfare (U) Close Combat (U) Weapon System Management The T2S2 Report		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This study was undertaken as a result of TRADOC's Total Tank System Study (T2S2). T2S2 Report/concluded that combat capability of the Army Tank Force is seriously degraded because current management of tank resources is not adequate. Findings of this report confirm and strongly reinforce the T2S2 general conclusion. Report focuses on actions necessary to integrate functional subsystems to effect total system improvements for Armor Forces. Report contains findings and recommendations to improve Armor Forces in the functional areas of training, personnel, logistics, acquisition, and management. Key recommendation		

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20. This establishment of "tank cells" and a DA Tank Management Office to integrate and implement these recommendations by using a total weapon system approach to management of Armor Forces.

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